

UNITED STATES OF AMERICA

+ + + + +

DEPARTMENT OF AGRICULTURE

+ + + + +

LIFE CYCLE ASSESSMENT FORUM

+ + + + +

Tuesday
January 5, 2010

+ + + + +

The forum met at 8:30 a.m. in the
Jefferson Auditorium at the USDA, 1400
Independence Avenue, S.W., Washington, D.C.,
Ron Buckhalt, presiding.

PRESENT:

RON BUCKHALT, USDA, Chair
ROBERT ANEX, Iowa State University
MARVIN DUNCAN, USDA
JEFF GOODMAN, USDA
RAMANI NARAYAN, Michigan State University
STEPHAN SYLVAN, EPA

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

ALSO PRESENT:

PETER ARBUCKLE, USDA

JOHN BRADFIELD, The Composite Panel
Association

JAMES DARR, EPA

STEVEN DAVIES, NatureWorks

STEVE DEVLIN, Iowa State University

THOMAS FEELEY, Roofing Resources; Green
Building Solutions and Supplies

RICHARD HELLING, Dow Chemical

KATE LEWIS, USDA

WILLIAM "CHIP" MURRAY, American Forest and
Paper Association

CARL MUSKA, DuPont

JACQUELYN OTTMAN, J. Ottman Consulting

SUEANNE PFIFFERLING, Pfifferling & Associates

MARLENE REDDOOR, EPA

AMY SCHAEFFER, American Forest and
Paper Association

LAURA SILVERMAN, USDA

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

T-A-B-L-E O-F C-O-N-T-E-N-T-S	
Welcome and Overview	
Ron Buckhalt, USDA.....	4
BioPreferred and Environmental Assessment	
Jeff Goodman, USDA.....	9
Quantifying Sustainability, A Summary of Active Initiatives	
Stephan Sylvan, EPA.....	39
Searching for Sustainability: Sending the Right Signals in the BioPreferred Program	
Dr. Robert Anex, Iowa State University.....	73
Carbon Footprint Assessment, a Workable Model for Environmental Improvement	
Dr. Ramani Narayan, Michigan State University.....	106
Open Discussion and Questions.....	138
Wrap up and Adjourn.....	229

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

P-R-O-C-E-E-D-I-N-G-S

(8:35 a.m.)

CHAIR BUCKHALT: Okay, folks. Good morning and welcome to this public meeting. We will be talking about Life Cycle Assessment, a lot of environmental ideas that are out there.

My name is Ron Buckhalt. I am manager of the BioPreferred Program. I will be serving as your host and moderator today. We have a couple of things I want to get out of the way, some housekeeping things that we need to look at. We were delaying a little bit there. In case you were wondering, we were trying to get the AT&T operator on and they put us on hold. But you know that happens in the best of worlds. Right?

It is time to go ahead and get started anyway. I hope that you folks on line can indeed hear us. We have a number of phone lines out there that are listen only at this point. So if you have a question, if you are

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 on the phone line, you want to ask or have
2 addressed as we go on today, there are a
3 couple of ways you can do that. You can e-
4 mail your question to biopreferred@usda.gov or
5 there is also a GoToMeeting site that we are
6 using, gotowebinar.com and you can ask your
7 question publicly or in private. We will see
8 it here. But we do ask that whether you go to
9 the USDA website, biopreferred.gov or you go
10 to the webinar.com, that you do identify
11 yourself and your organization. And we will
12 try to get to your question before the end of
13 the day.

14 We are going to have four speakers
15 today, which will be trying to put everything
16 into perspective. There will be a diversity
17 of opinion on life cycle analysis and the type
18 of analyses that are out there and how they
19 should be applied to biobasedbiobased
20 products.

21 So we are to going to hear from
22 those four speakers. And we are going to take

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 just a couple of questions after each of those
2 speakers for clarifying type questions. And
3 then at the end, we will have panel of three,
4 because one of the individuals is going to
5 have to depart early. So we will take a few
6 more questions after his presentation, our
7 first speaker on a panel would be Marvin
8 Duncan. So after Dr. Duncan speaks, we will
9 have a few things from him, question-wise. So
10 we will take a little longer there so that his
11 points can be addressed.

12 Housekeeping. Restrooms as you go
13 out the back here to your left. The men's
14 room is the first aisle you will come to, if
15 you will, that is Wing 6 and the women's
16 restrooms are in Wing 7. So if you have to go
17 out and use those facilities, they are there.

18 We are going to hold the record
19 open for today's meeting. This is a public
20 meeting. This is not a public hearing. We
21 are going to hold that public meeting open for
22 30 days. So if you have additional comments,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 additional things you want to talk about you
2 think we should have addressed, please take
3 the time to do that. So again we will hold
4 the record open for another 30 days.

5 We are recording today's session.
6 All the speakers, all the comments, all the
7 remarks will be posted online. We hope to get
8 that up, they tell me within ten days, but at
9 least we will have it in ten days to look at.

10 So we will be publishing that on our
11 biopreferred.gov website very, very quickly.

12 I am sure I have forgotten
13 something. Please turn your phones to vibrate
14 or off. There is nothing worse than that
15 during the middle of a meeting to have a phone
16 going off. So, if you would do that.

17 We have note cards also for
18 questions. If you have questions as we go
19 along, we would like for you to write your
20 questions down so we do have a record of
21 those.

22 Again, we appreciate you all coming

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 today. We also appreciate the folks on the
2 line and we are going to go ahead and get
3 started.

4 Let me tell you about our four
5 speakers very quickly, actually five because
6 my boss is going to speak for just a few
7 minutes. Dr. Marvin Duncan is going to talk
8 about BEES and the current role of
9 environmental assessment in BioPreferred.
10 Stephan Sylvan with EPA is going to talk about
11 quantifying sustainability, a summary of
12 active initiatives. We will then take a short
13 break, come back and hear from Dr. Robert
14 Anex, Iowa State University; searching for
15 sustainability: sending the right signals in
16 the BioPreferred Program, followed by Dr.
17 Ramani Narayan, who is no stranger to this
18 area. I think Dr. Narayan has been at most
19 every meeting we have, every public meeting on
20 these issues and he will be speaking about the
21 carbon footprint assessment, a workable model
22 for environmental improvement.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And then we will have an open
2 discussion until 1:00. We have the phone
3 lines until then. We have the theater here
4 until 1:00 this afternoon. I think we will
5 probably end before then but we will just keep
6 going as long as the questions are coming in.

7 So without further ado, I would
8 like to turn the podium over to Jeff Goodman,
9 who is Chief of the Environmental Management
10 Division at USDA. He is our boss. He
11 formerly worked at EPA. He has been a
12 consultant. He knows a lot about the
13 BioPreferred Program. He is the individual we
14 turn to when we have questions that need
15 clarifying.

16 So Jeff, if you would bring us a
17 few remarks and then we will move on down the
18 program.

19 MR. GOODMAN: Good morning. Thank
20 you for coming this morning. Ron asked me to
21 spend a few minutes explaining the context of
22 why we are here. I think most or all of you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 know that we operate under the legislative
2 authority of the Farm Bill Section 9002, the
3 Biobased Markets Program. Within that program
4 there are two components. There is a federal
5 procurement preference program and there is a
6 labeling program. We have program guidelines
7 that describe how the federal procurement
8 preference program works, how USDA designates
9 categories of products for preferred federal
10 procurement. These program guidelines are
11 coming up on about five years old. There is
12 some language in the 2008 farm bill direction
13 USDA to designate intermediates and
14 feedstocks. The existing program guidelines
15 from 2005 don't really address this issue. So
16 Congress has asked us, in effect, to reopen
17 the program guidelines and to revise them to
18 incorporate the new legislative mandates. So
19 in the course of doing that, we are trying to
20 examine the program guidelines in a broader
21 context because they are five years old and
22 one of the issues that we are looking to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 address is the whole area of environmental
2 affects and life cycle assessment.

3 The statute provides some very
4 general information about our requirements in
5 providing environmental information. Marv
6 Duncan will talk to you more about those
7 legislative requirements. We have picked a
8 process for doing that. It is in our program
9 guidelines. It is the so-called BEES analysis
10 and Marv will go into some of the details of
11 how that works and how it came to be that USDA
12 picked this as our evaluation tool.

13 Within the federal community, there
14 is a wide variety of opinions about the
15 benefits and drawbacks of this kind of tool
16 that range from extremely positive to fairly
17 negative. And Marv, one of the people who is
18 a strong advocate for the program the way it
19 is, will describe a lot of those benefits.

20 On the negative side, we have heard
21 things about the expense of this analysis, its
22 incomprehensibility to the general public and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 to the procurement officials, as well as the
2 fact that it comes up with a conclusory single
3 score that in and of itself is not a
4 discriminator for us designating products.

5 And so we want to look at the whole
6 issue, look at how other people evaluate
7 products from an environmental perspective,
8 and ask the question what should our program
9 guidelines do going forward. We do this from
10 a completely open-minded perspective. We have
11 no a priori reason to abandon what we have.
12 Similarly, we have no reason to necessarily
13 keep it just the way it is. So we are looking
14 for ideas, alternative approaches, and
15 suggestions about what the best way to
16 evaluate the environmental impacts of these
17 BioBasic products. And we are looking to
18 think about that from both a perspective of
19 the federal procurement preference program, as
20 well as to examine the question of what role
21 should we have with environmental impact
22 assessment for our labeling program as well.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 With that, I think I will turn it
2 over to Marv or back to Ron.

3 CHAIR BUCKHALT: Thanks, Jeff for
4 putting that in perspective. I would be
5 remiss if I didn't recognize a couple of other
6 USDA folks here who are staff in our office.
7 The Deputy Program Manager, Kate Lewis, if you
8 would stand. And Laura Silverman is out
9 front. Unless she has joined us, she is out
10 trying to get folks registered as you come in.

11 We have a couple of folks from
12 Osborne and Barr over here and we have a
13 couple of folks from Iowa State University who
14 are supporting contractors. Also AMA back in
15 the back there. So, these are some of the
16 folks that are helping us work on this program
17 and keep things going but I just wanted to
18 recognize those folks at this point and even,
19 I think Jackie Ottman is there, too. Jackie
20 is also doing some work for us too on the
21 label.

22 Again, for those of you listening on the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 conference line, please go to webinar.com, use
2 the Webinar ID 311301721 to follow the slide
3 presentation online. So, we are going to be
4 introducing Marvin Duncan in just a moment.
5 So again, if you are listening, you can go to
6 the webinar and follow it online and see his
7 slides.

8 Let me introduce Dr. Duncan. Dr.
9 Marvin Duncan is a senior agricultural
10 economist in the Office of Energy Policy New
11 Uses, within the Office of the Chief Economist
12 at the USDA. Dr. Duncan works primarily in
13 the area of biobasedbiobased products and
14 renewable power. He managed the development
15 of the BioPreferred Program prior to its
16 transfer to USDA's Office of Departmental
17 Administration, now Departmental Management.
18 He has held research and management positions
19 at the federal reserve bank of Kansas City,
20 Farm Credit Administration. He is a professor
21 and Department Chairman of a Land-Grant
22 University. He has a BS degree in agronomy, a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MS in agricultural economics from North Dakota
2 State University and Ph. degree in
3 agricultural economics from Iowa State
4 University. Dr. Duncan.

5 (Applause.)

6 DR. DUNCAN: Ron, thank you very
7 much. Ladies and gentlemen, I am delighted to
8 be with you here this morning to discuss the
9 analytical framework that we used as we began
10 to put together what became the BioPreferred
11 Program.

12 And of course, our reason for doing
13 this was linked very closely to the statute
14 that created the program. And quoting from
15 that statute, Public Law 107-171 May 13, 2002,
16 that's a long time ago, Jeff, one of the
17 requirements for USDA in putting the program
18 together was to provide information on the
19 availability, the relative price, performance,
20 and the environmental and public health
21 benefits of such materials and items and,
22 where appropriate, shall recommend the level

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 of biobasedbiobased material to be contained
2 in the procured product.

3 So as you can see, the Congress
4 wanted to have good solid information
5 available for consumers as they were
6 considering biobasedbiobased products.

7 The screen before you now is
8 discussing how we went about determining
9 biobased content, our first challenge.
10 Because at the time that we began to put the
11 program together, there was no scientifically
12 based repeatable procedure for determining
13 biobased content. The statute required that
14 the biobased content be done in a way that
15 enabled the consumer to understand how much
16 biobased content was in these products.

17 And as you may know, or perhaps you
18 do not know, it is relatively rare that a
19 product that is a biobased product is made up
20 entirely of biobased material. In fact, for
21 some of the more high performance products,
22 the biobased content may appear to be

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 relatively low but that is linked to the
2 performance optimization of the product.

3 We worked with NIST, GSA, and EPA.

4 Of course, these were three agencies
5 identified in the statute to discuss how we
6 were going to handle the issue of biobased
7 content.

8 We then worked with ASTM
9 International, a major standard-setting body
10 in the world that develops consensus standards
11 and includes in its consensus process
12 industry, government, and academe to develop a
13 standard for determining biobased content.
14 That standard was the ASTM Standard 6866,
15 which measures biobased content as a percent
16 of the weight of the total organic carbon in a
17 product. That standard is science-based, it
18 is reliable and repeatable.

19 And at the time we did this, we
20 were rather far ahead of the power curve. We
21 were cutting new ground. But since then, the
22 analytics have moved along in the industry and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 in international agencies and other
2 governments so that if anything, we are at or
3 slightly behind the power curve currently with
4 regard to analytics.

5 One place where the analytics have
6 not changed, however, is in the biobased
7 content arena.

8 Can I have the next slide, please?

9 There is a requirement in the
10 statute on environmental and public health
11 benefits. The statute requires guidelines for
12 the program to provide information on the
13 environmental and health benefits of biobased
14 products and materials.

15 We determined this on the basis of
16 what the statute called items, which really
17 was a grouping of similar products and there
18 are quite a number of these groupings that
19 have been designated for preferred procurement
20 and, indeed, other items that are yet to be
21 designated. And the process, it was also
22 important that we develop life cycle costs.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 So again, after consultation with
2 the statutory required agencies with whom we
3 were expected to communicate and consult,
4 NIST, GSA, and EPA, we adopted the use of
5 NIST's analytical framework, building for
6 environmental and economic and sustainability
7 or BEES. And in addition to that, we worked
8 again with the ASTM International to create an
9 ASTM Standard 7075, which was somewhat easier
10 for a business firm with its own in-house
11 laboratory to use.

12 The primary difference from a
13 practical perspective in these two standards
14 is that the BEES analytical framework enables
15 one to develop a single score or BEES score
16 that indicates the environmental friendliness
17 of the product. And it is relatively easy to
18 market to consumers in the sense that a lower
19 score means higher environmental friendliness.

20 The ASTM standard does not develop
21 the BEES score but it does, consistent with
22 the BEES analytical framework, develop

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 information, quantitative information on the
2 environmental effect, health effect of 12
3 different measures.

4 We determined these BEES scores, as
5 I indicated, for groupings of products and the
6 designation process. And the regulations
7 provide that information on individual
8 products that are designated for preferred
9 procurement must be available to federal
10 agencies up on their request, recognizing that
11 there is a cost associated with this.
12 Although, in terms of large-scale production
13 of biobased products, the cost becomes
14 relatively de minimis.

15 This information can be provided on
16 the electronic catalogue for biobased products
17 that qualify for preferred procurement. And
18 that is a catalogue that BioPreferred
19 maintains. Next slide, please.

20 The BEES and the ASTM 7075
21 analytical frameworks provide quantitative
22 measurements on 12 environmental and public

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 health indicators. And these are
2 acidification, ecological toxicity, fossil
3 fuel depletion, habitat alteration, indoor
4 air, smog, criteria air pollutants,
5 eutrophication, global warming, human health,
6 ozone depletion and water intake.

7 Now I know that there are many who
8 think that it would be better to focus on one
9 measure; carbon, for example. And at first
10 blush, this seems to be a rather attractive
11 idea. One of the problems with that, of
12 course is that as one optimizes biobased
13 products for carbon, one finds that one
14 quickly runs into other environmental
15 constraints, such as water availability. And
16 a result of that, I think, is going to be that
17 USDA, working with an international effort to
18 develop standards for biofuels is in the
19 process of moving beyond focusing only on CO₂
20 and is thinking in terms of a broader set of
21 environmental measures and, indeed, measures
22 that include not only environmental measures

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 but economic and social measures of
2 sustainability as well, with the idea that
3 eventually this will be imbedded in ISO
4 standards.

5 Next slide, please.

6 Performance characteristics are an
7 important part of marketing biobased products
8 or any product, for that matter. In the case
9 of BioPreferred, manufacturers are asked to
10 provide information on performance
11 characteristics of their product and these
12 include standards against which the product
13 has been tested or can be tested.

14 Additional information may be
15 available on well the product performed on a
16 test. Typically purchasers will require such
17 information to support a purchase decision.
18 Indeed, it is unlikely that anyone is going to
19 buy a product without having access to
20 information with regard to the performance
21 characteristics of that product. Hence, we
22 encouraged manufacturers to provide that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 information. And that information is, as I
2 understand it, still being made available on
3 the electronic catalogue for preferred
4 procurement products; a very important
5 consideration in helping prospective customers
6 understand which product to buy and what to
7 expect of that. Next slide, please.

8 Now, why is information on the
9 environmental footprint and performance
10 important? Only a life cycle assessment tool
11 such as BEES or ASTM Standard 7075, although
12 not exclusive to those two, provides credible
13 science-based information on the environmental
14 footprint and the life cycle costs of a
15 product in use. For product performance
16 information, it is critical to a customer in
17 judging the usefulness of the product.

18 Only by the use of comparable
19 measurement tools across products can
20 comparisons of environmental footprints and
21 performance profiles across products be
22 achieved. And this then provides essential

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 information to consumers in the selection of
2 biobased products.

3 With regard to the preferred
4 procurement of those products, the statute
5 expected us to develop these. We discovered
6 that as we developed them, industry quickly
7 became onboard in recognizing the importance
8 of this information to consumers. Next slide,
9 please.

10 Now the question that is often
11 asked is biobased better than fossil energy
12 based products? Now, I know that there are
13 some in this room, I suspect there are some in
14 this room. I know there are some in the
15 listening audience who would say of course
16 biobased is better than fossil based products.

17 The reality is that biobased products may or
18 may not be preferable to fossil energy based
19 products in terms of environmental footprint
20 or performance in use.

21 The environmental footprint
22 question must be answered by a life cycle

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 assessment and the performance question must
2 be answered by comparison of performance
3 characteristics. Quantitative measures are
4 increasingly used. The U.S. Congress has
5 required the biofuel production reduce
6 greenhouse gas emissions, as an example.

7 I spoke earlier about the efforts
8 that USDA is involved in internationally to
9 develop a broader array of environmental
10 standards or measures. And many countries are
11 requiring information on environmental
12 footprint as well. I currently sit on the
13 OECD's industrial biotechnology task force.
14 And just this past summer, we held a major
15 workshop on this very issue. And out of that
16 workshop, we determined that this was an
17 important issue area for the OECD and its
18 member countries and continued work would take
19 place to develop a strong set of
20 scientifically sound indicators of
21 sustainability.

22 So it is clear that the world

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 opinion and the industrial opinion is moving
2 in the direction of quantitative measures that
3 are reliable and repeatable.

4 A final slide for you, if I may,
5 one more, and that is, is higher biobased
6 content always better. I recognize again
7 there are some who think it probably
8 inevitably is better. The reality is no, it
9 is not. And it may be worse. And that is
10 because increasing biobased content in a
11 product does not mean it is more
12 environmentally sustainable. That is
13 determined by a life cycle assessment. And
14 there typically is maximum biobased content
15 that is consistent with optimizing a product's
16 performance in use. The higher biobased
17 content often will degrade that product
18 performance below its optimum.

19 And while biobased content is
20 renewable, environmental footprint in product
21 performance are much more important drivers,
22 we found, in product selection.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 I thank you very much for your kind
2 attention. And Ron, do you want me to respond
3 to a question or two if there are some?

4 CHAIR BUCKHALT: Yes, please,
5 Marvin, if you would.

6 Folks, is this coming across? Can
7 you hear me on this or not? Is this coming
8 through? Okay. I wasn't sure.

9 Yes, please. If you are here and
10 want to ask a question, please take one of
11 these mikes, ask your question, address Dr.
12 Duncan some questions. Any questions on the
13 web, young ladies, that have come in, other
14 than those two that you gave me? Was that it?

15 Well let me ask -- certainly, I am
16 sure there is somebody has a question for
17 Marvin. The reason I am asking right now so
18 much is that he is going to be having to leave
19 us and go to a doctor's appointment.

20 Jackie are you coming forward?
21 Jackie Ottman.

22 MS. OTTMAN: Thank you, Marvin, for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that nice presentation.

2 Actually I have a couple of
3 questions. One of them is just clarity.

4 DR. DUNCAN: I am not going to be
5 able to hear her.

6 CHAIR BUCKHALT: I know. Jackie,
7 hang on one second.

8 MS. OTTMAN: Okay.

9 DR. DUNCAN: Jackie, we have an
10 echo in the room as well.

11 MS. OTTMAN: Okay. Is this better?

12 CHAIR BUCKHALT: Yes.

13 MS. OTTMAN: Okay. I have got a
14 couple of questions for you, Marvin. One is
15 first it is clarity and I just don't
16 understand the science. When you said
17 optimizing carbon seems to limit water
18 availability, what did you mean by that?

19 DR. DUNCAN: What I said was if one
20 optimizes only one measure of environmental
21 sustainability, what one will find is that one
22 rather quickly violates some other measures of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 environmental sustainability. And because of
2 that, there seems to be, at this point, a
3 sense that a broader set of environmental
4 indicators is more appropriate, albeit more
5 complex.

6 MS. OTTMAN: Okay. Also when you
7 said the environmental footprint question must
8 be answered by an LCA, have there been no
9 proxies uncovered to date?

10 DR. DUNCAN: I'm sorry, ma'am. I
11 am having trouble.

12 MS. OTTMAN: You mentioned that the
13 environmental footprint question must be
14 answered by a full LCA. Have there been no
15 proxies discovered to date as an indicator of
16 overall environmental performance?

17 DR. DUNCAN: I am going to leave
18 that question to be answered by successive
19 presenters who are experts in LCA. But the
20 point I was making was that one cannot rely on
21 biobased content as a measure of
22 sustainability. One needs to have information

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 on the environmental footprint, which is
2 developed through an LCA process.

3 MS. OTTMAN: Thank you very much.

4 CHAIR BUCKHALT: We have a question
5 that came in through the webinar that I would
6 like to address at this point. And this one,
7 if you would like to chime in on this, Dr.
8 Duncan, that would be great but I think I
9 would like to ask Steve Devlin of Iowa State
10 University if he would address these two
11 questions. Steve?

12 MR. DEVLIN: Okay, the first
13 question is from Mr. Mike Dolkowski. First
14 the question is, is there a list of LCA
15 practitioners that USDA can share? And then
16 secondly, how can an LCA practitioner let USDA
17 know that they are available to participate?

18 DR. DUNCAN: That is really a
19 question that I probably should not be the one
20 who answers. But I believe that you will find
21 that there is access to a list of LCA
22 practitioners. And certainly NIST at the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Department of Commerce would be able to
2 provide information. I suspect that the
3 BioPreferred team is able to provide
4 information on that. And I suspect again,
5 Jeff, that if there are LCA practitioners who
6 want to become involved in this process, that
7 they could contact the BioPreferred team.

8 MR. GOODMAN: We do not maintain a
9 separate list of LCA practitioners. However,
10 if people are interested, they are certainly
11 welcome to contact us. And I think Marv, your
12 earlier answer about referring back to NIST is
13 a good one.

14 MR. DEVLIN: There is a relatively
15 new LCA practitioner's association that we are
16 aware of and we have done some reaching out to
17 that organization in terms of interaction with
18 the BioPreferred Program but we don't have a
19 formal listing at this point.

20 DR. DUNCAN: I think that the
21 reality is that when we started this program,
22 we were substantially ahead of the power

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 curve, for the most part. There were larger
2 manufacturers who had substantial experience
3 with life cycle assessment and quite a number
4 of academics who were working in the area. In
5 the last several years, people in the
6 industry, and government, and environmental
7 circles have become much more familiar with
8 life cycle assessment and are much more
9 prepared to discuss what they want from life
10 cycle assessment.

11 So, we started out ahead of the
12 power curve. We are now at, perhaps even
13 slightly behind the power curve.

14 MR. MUSKA: Good morning, Marv.
15 Can you hear me?

16 DR. DUNCAN: Yes, if you speak up
17 loudly.

18 MR. MUSKA: Okay. I am Carl Muska
19 with DuPont. And Marv, thanks for the great
20 presentation. I thought that was a very good
21 summary of where we have been and where we are
22 going.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 The question I have, you made the
2 statement, I would just like some follow up
3 clarification. I certainly don't disagree
4 with the statement but I just wanted to get
5 your thoughts behind it that we are now behind
6 the curve on the analytics; whereas before we
7 were ahead of the curve relative to assessing
8 biobased products et cetera. Could you
9 elaborate on that, please?

10 DR. DUNCAN: Surely. When I say we
11 were ahead of the power curve initially, I
12 meant we in USDA in putting this program
13 together.

14 I think that since the start of
15 this effort, industry and academe have made
16 very substantial strides in this area and they
17 are probably ahead of the power curve or ahead
18 of where we are in this process.

19 The point I wanted to leave with
20 you or the thought I wanted to leave with you
21 is that this is an effort that has gathered
22 very substantial momentum both in industry, in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 government, in academe and pretty much around
2 the world. So, my sense is that we are going
3 to learn to live with life cycle assessment
4 and become more dependent on that, even though
5 as you will learn, I think, with other
6 speakers, the final answer is not yet in on
7 the ideal life cycle assessment.

8 The second point I wanted to leave
9 with you is that as we think about life cycle
10 assessment, if we are to make this optimally
11 useful to consumers, we have to use a similar
12 methodology so that it is possible compare the
13 environmental footprint across products.

14 MR. DEVLIN: Marv, Steve Devlin
15 with Iowa State University.

16 I was just wondering if you have
17 any thoughts in relationship to how we might
18 improve the acceptance of the LCA as a model
19 or as a tool used by consumers and used by
20 government procurement agencies.

21 DR. DUNCAN: I am going to leave
22 the answer to that question to the LCA

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 experts. It would be presumptuous of me to
2 delve into that at this point. What I have
3 said consistently is that we need to develop
4 methodologies that are compatible and
5 relatively comparable sufficiently so that we
6 are able to make cross-product comparisons.

7 MR. GOODMAN: Marv, Jeff Goodman.
8 I just wanted to amplify one point that you
9 made.

10 I agree with your assessment about
11 USDA being at or ahead of the power curve and
12 since that time a lot of progress has been
13 made outside of USDA, and the academic
14 community, and industry. This is precisely
15 why we are reaching out and having this public
16 meeting to try to take advantage of all that
17 knowledge that has been garnered to try to
18 have that brought to bear in our rulemaking
19 process.

20 DR. DUNCAN: I suspect, Jeff, that
21 the final word will not be in on life cycle
22 assessment for several years. That does not

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 mean that one should not begin to utilize it
2 as a useful tool.

3 Thank you so much for your time.

4 (Applause.)

5 CHAIR BUCKHALT: Thank you, Dr.
6 Duncan. We appreciate your insight, your
7 comments. Again, folks who are just calling
8 in, just listening in. If you are listening,
9 you can go to the webinar.com and use the
10 webinar ID 311301721 to follow the slide
11 presentation.

12 We took a little longer with the
13 questions with Dr. Duncan than we are probably
14 going to take as we go on with the other
15 speakers but we will have the other three
16 speakers around to have a panel up front a
17 little later on at the conclusion of prepared
18 remarks.

19 So at this point, I would like to
20 just move on down the program unless there is
21 anything else. Any other questions here for
22 Dr. Duncan that we want answered before we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 move on? Other LCA type questions? Hang on
2 one second.

3 Marv, while you are still here, why
4 don't we take a chance and answer a couple of
5 quick ones and then we will move on, if you
6 don't mind.

7 The question comes from a guy named
8 Robert Beck. Does your definition of product
9 performance also include the economic aspects
10 of the use of biobased raw materials versus
11 petro-based raw materials?

12 DR. DUNCAN: I think the answer to
13 this question is probably, the short answer is
14 probably yes because in the discussions we
15 have had with various groups that are working
16 on life cycle assessment, there is an
17 increasingly strongly held view that life
18 cycle assessment needs to take into account or
19 environmental sustainability needs to take
20 into account not only environmental issues but
21 also economic and social issues.

22 CHAIR BUCKHALT: I know the answer

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 to this one if you want to read that one.

2 DR. DUNCAN: The question is, is
3 end-of-life of the implication of the product
4 considered?

5 Yes. And in the NIST BEES analysis
6 it is. And that can be an important issue
7 because that may turn out to be one of the
8 important advantages of biobased products.

9 CHAIR BUCKHALT: Again, thank you
10 so much Dr. Duncan for your presentation. We
11 really appreciate it.

12 So folks, let's move on and
13 introduce our next speaker, Stephan Sylvan,
14 EPA Partnership Program Coordinator, National
15 Center for Environmental Innovation of
16 Environmental Protection Agency. Stephen
17 started at EPA in 1994 as a climate policy
18 advisor and analyst supporting Energy Star,
19 green lights and a host of other eco labeling
20 and environmental certification programs.

21 Stephan serves as the EPA
22 Partnership Program Coordinator responsible

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 for managing policy for the agency's, check
2 this, 40 ecolabelling and other partnership
3 programs, including Energy Star, WaterSense,
4 Design for the Environment, SmartWay
5 Transportation, Indoor Air Plus, and Green
6 Chill. He also helps coordinate EPA's
7 sustainable products network.

8 Prior to joining EPA, Stephan led
9 product R&D teams at AT&T Bell Labs and
10 Eastman Kodak. Stephan earned a Master of
11 energy, natural resources environmental policy
12 degree from the Harvard Kennedy School of
13 government and a BS in computer and electrical
14 engineering from Purdue.

15 Please welcome Stephan Sylvan.

16 (Applause.)

17 MR. SYLVAN: Good morning
18 everybody. Thank you for the introduction and
19 thank you Kate Lewis of the BioPreferred
20 Program for inviting me to speak today.

21 Kate Lewis asked me to speak with
22 you today about the major multi-stakeholder

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 bodies that are attempting to deal with the
2 growing challenges in the world of
3 ecolabelling, environmental certification
4 systems, and environmental claims. And I was
5 thinking I had given a presentation a couple
6 of times on this topic within EPA and to some
7 other groups and I was trying to think of a
8 way to explain this, the challenges and the
9 initiatives to address them in a way that
10 might not seem to sort of sustainability
11 speak, sustainability sort of lingo, and to
12 try to make it a little easier to understand.

13 So I came up with a sports metaphor and I
14 hope -- I am not a huge sports fan myself. I
15 used to be when I was a kid. But hopefully
16 this will work. And if there are any serious
17 baseball fans in the room who I can turn to if
18 I get the metaphor -- nobody raised their
19 hands. Okay. So, Kate Lewis and one other.
20 Okay. If I mess up this analogy, please chime
21 in and let me know where I messed up and we
22 can fix it.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 So an overview of my presentation.

2 So I am going to start with a sports analogy
3 as I mentioned, a baseball analogy. I will
4 talk about, I will use that to frame the major
5 challenges in the world of ecolabelling,
6 environmental certification systems, and
7 environmental claims that actually have led to
8 the three major initiatives that are
9 attempting to address these issues.

10 Before we go into the details of
11 the three major initiatives, I thought I would
12 give you just sort of a bird's-eye perspective
13 of sort of about 10-12 initiatives before I
14 dive in and focus on the three major ones.
15 The three being the Sustainability Consortium,
16 the Packard Foundation, and the Keystone
17 Center's Green Products Round Table.

18 So, the sports analogy. You will
19 be the guinea pigs here. You could let me
20 know if this works or not.

21 Imagine for a minute you live in a
22 country where there are quite a number of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 baseball fans. Quite a number, millions
2 perhaps, tens of millions of baseball fans who
3 would love nothing more but to watch great
4 baseball and television in the sports stadiums
5 and so forth and are willing to pay good money
6 for that, so long as they are watching really
7 good baseball, the best baseball, the best
8 professional baseball.

9 And many people in this country,
10 maybe some of you, would like to also spend
11 money on paraphernalia, merchandise, sports
12 merchandise, baseball caps, jerseys, that sort
13 of thing. Next slide.

14 There is one little problem. Well,
15 more than one little problem. In this world,
16 this hypothetical world, there are 500
17 professional baseball leagues. Not just sort
18 of one Major League Baseball with a National
19 League and an American League but there are
20 500 professional baseball leagues. And next
21 slide please.

22 And what is more, is that some

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 leagues focus just on batting averages.
2 Nothing more than batting averages. Other
3 leagues focus on say home runs. They just
4 track home runs. They are not interested in
5 the other aspects of the game and some are
6 just focused on pitching and don't care about
7 batting. They just focus on earned run
8 averages. I hope I am getting the terms
9 right. I haven't followed baseball since I
10 was a kid in Chicago watching the Cubs and
11 that was a disaster. So, I have learned my
12 lesson.

13 What is more, there are thousands
14 of baseball teams. Not just a few dozen.
15 There are tens of thousands of players,
16 professional players, that is, in these
17 professional leagues and there is no major
18 league baseball body that defines the major
19 statistics. What is a run batted in, an RBI?

20 What is a batting average? What is an earned
21 run average? There is no such national body
22 that is widely accepted putting out these

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 statistics, defining what the statistics are,
2 collecting the statistics, analyzing, doing an
3 analysis to produce them and to distribute
4 them. There is no such body.

5 So what you have is hundreds of
6 claims out there, if not thousands of claims
7 of teams and players as national and world
8 champions. So for example, we know that there
9 are certain teams that win the world series
10 every year. And this world that I am painting
11 for you, 500 leagues, there are 500 world
12 series champs, many MVPs, most valuable
13 players.

14 And I will explain this last bullet
15 a little later. It will make a little more
16 sense later.

17 But among these claims out there,
18 there are many hidden tradeoffs in the claims.

19 I will just give you one example. RBIs, runs
20 batted in versus home runs. Two different
21 statistics. Some are claiming that home runs
22 might, we have got players with 100 home runs

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 in the year. Well, what about RBIs? And what
2 league is this person competing in? Is it an
3 easy league? Is it a bunch of high schoolers
4 playing kind of quasi-professional ball? Is
5 this really a true professional league? There
6 is no proof, in many cases. There is vague
7 claims, irrelevant claims, some outright lies,
8 the lesser of two evils, which I can get into
9 in false labels. So all of these claims out
10 there and a lot of confusion.

11 So why did I say 500 leagues?
12 Well, it is maybe not a perfect analogy but
13 there is an organization which I will get to
14 in the next slide that is tracking ecolabels
15 in North America, Europe and Asia. They have
16 found 500 to date. Actually, as of two months
17 ago, it was 450. So this number is growing.
18 By the time their work is done, maybe it is
19 going to be up to a woman, Anastasia O'Rourke
20 is doing this, she said that we may be up to
21 700 or so ecolabels. Next slide, please.

22 This is ecolabelling.org. If you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 haven't checked it out, it is worth a look.
2 If you are interested in BioPreferred products
3 and related ecolabelling issues, here you can
4 see she tracks the number of ecolabels in
5 buildings, carbon, electronics and so forth.
6 This is an initiative supported by Duke
7 University and the Sustainability Consortium
8 which I will get into in a minute. Her
9 company is Big Room. Next slide.

10 Even if you look at the major North
11 American product ecolabels, so you narrow it
12 to North America, narrow it to just products,
13 and you look at the major initiatives either
14 because they have been out there for a while,
15 they have got a lot of media and other
16 exposure, product exposures, or they are
17 backed by some major entity, like for example
18 the USDA, you will see maybe close to 30 of
19 them out there today. Next slide, please.

20 So Kate Lewis and I both come from
21 the Energy Star programs. I was there 12
22 years ago or more, 10-12 years ago. And back

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 then we would hope for the day when the
2 American consumer and large institutional
3 buyer would wake up to all these environmental
4 issues and start demanding products in large
5 numbers that are greener. And it is a little
6 bit be careful what you wish because right now
7 we are seeing a great deal of that demand but
8 there are some challenges, which some of these
9 slides will help frame, I hope. So there is a
10 surge in green advertising tracked by
11 TerraChoice, Scott Case. Next slide please.

12 A surge in news coverage about the
13 topic of greenwashing. Next slide, please.

14 And of course, now there is this
15 modern day metric. You don't know if
16 something is really happening, unless there is
17 a lot of blogging on it. Well, an
18 organization called BSR tracked the blogging
19 on green wash and it is a huge surge in
20 greenwashing from 2006 to 2008. And who knows
21 what 2009 and 2010 will look like. My guess
22 is that it will continue to go north. Next

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 slide, please.

2 Scott Case of TerraChoice, one of
3 the sort of elder statesmen in the
4 ecolabelling world, he has been around for a
5 long time, he had his organization do a survey
6 of over a thousand products they examined.
7 All but one had demonstrably false or
8 misleading statements on the packaging or the
9 advertising for it and so on and so forth.
10 Next slide, please.

11 So his organization came up with
12 this idea of seven sins of greenwashing.
13 Hidden tradeoffs, no proof vagueness I
14 mentioned before. Next slide.

15 Since there is not probably a lot
16 of time to go into each slide in detail, just
17 so you know, I do have a slide that defines
18 what these sins of greenwashing are and I
19 could go into them later, if you would like.
20 Next slide, please.

21 This slide gives you some sense of
22 what the prevalence of greenwashing, in his

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 study, happen to be. Many of them are hidden
2 tradeoffs but you can see no proof vagueness
3 are also very large segments of the pie chart.

4 Next slide, please.

5 What does this look like to the
6 consumer or the institutional buyer? The
7 Tower of Eco-Babel, as one cartoonist put it,
8 with all these different labels floating out
9 there. Post-consumer waste, recycled content,
10 biocompatible, wind credits, all this sort of
11 thing. Next slide please.

12 So I hope from those slides you get
13 a sense of the challenges that are out there
14 and I could have gone on in greater detail
15 about the challenges that we face in the world
16 of ecolabelling, eco certification systems,
17 environmental claims. So now the switch to
18 the potential solutions. Next slide, please.

19 So there are about -- I am a part
20 of a group at EPA called the Sustainable
21 Products Network. We try to keep track of the
22 major issues and challenges and potential

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 solutions that are going on in this world of
2 sustainable products. And there are people in
3 this room who I recognize as experts in
4 sustainable products and they can probably add
5 to this list. But here is about ten that I
6 came up with.

7 Focusing first on the right,
8 Senator Feinstein put out an ecolabelling bill
9 about a year or so ago, a draft ecolabelling
10 bill for a national ecolabelling system. She
11 pulled the bill back, waiting for the results
12 of the Keystone Center's Green Products
13 Roundtable, which I will describe a little
14 later.

15 The Waxman-Markey, the big Climate
16 Bill has quite a bit on labeling, including an
17 element on carbon ecolabelling, carbon
18 disclosure. Congressional hearings on
19 greenwashing, I know of at least two that took
20 place. The State of California has a bill on
21 ecolabelling and sustainable products.

22 Senator Franken put out a draft

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 bill, I am told, on product disclosure. What
2 ingredients are in household consumer
3 products, for example. Instead of just
4 getting the ingredient list on food products
5 like for example cleaners around the house.

6 And then there is the Federal
7 Environmental Executive, the new green
8 executive order that focuses on the federal
9 agencies. And the Federal Trade Commission,
10 as many of you probably know, is working on
11 revisions to its environmental claims
12 guidelines.

13 So now on the left, that is where I
14 am going to focus most of the attention, all
15 the rest of the attention in my presentation
16 here on sustainability consortium, Packard
17 Foundation and Keystone Center's Green
18 Products Roundtable. So, next slide.

19 These initiatives focus in some way
20 on this system that we have. This is a very
21 crude diagram I put together. A little stick
22 diagram, if you will, of the economy sort of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 at the top and sort of all the systems at the
2 bottom trying to make the supply chains and so
3 forth greener.

4 On the left is environmental impact
5 assessment and so forth and lifecycle
6 assessment which we heard a little bit about.

7 Standard developers, conformity assessment
8 organizations, those are the entities that try
9 to determine whether or not a product meets a
10 volunteer environmental standard or not,
11 ecolabelling and so forth. Next slide.

12 So going back to the sports
13 metaphor, this is a bit of a risk but let's
14 try it. As I mentioned, Major League Baseball
15 has, it appears, statistics on what our
16 batting average is, earned run averages, RBIs
17 and so forth. And I believe they put them out
18 through the website, MLB.com. Many sports
19 commentators refer to them. My guess is, I am
20 not a huge sports fan, my guess is that a lot
21 of people trust them. A great deal trust
22 them. They may be debate certain statistics

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 here and there but by and large they are
2 respected, trusted and used.

3 And in the world of sustainable
4 products, I don't believe we have, as the last
5 speaker I think made clear, we don't have such
6 a body yet. It is sort of TBD, to be
7 determined. But the Sustainability Consortium
8 is, I think, making great strides in trying to
9 put together the equivalent of the Major
10 League Baseball statistics or at least
11 defining the major statistics and some
12 guidelines on how to develop them and how to
13 make them available to all the stakeholders
14 that are interested.

15 So, it is led by Dr. Jay Golden and
16 Dr. Jon Johnson, a tongue twister. Jay Golden
17 is with ASU, Arizona State and Jon Johnson is
18 with the University of Arkansas. And I have
19 slides that describe in greater detail, in
20 more formal terms, what this body and the
21 other bodies I am going to describe are doing.

22 But what has helped me and others at EPA

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 understand it, it is sort of like building the
2 Wikipedia, if you will, of sustainable
3 products data.

4 Wikipedia, as you might know,
5 doesn't necessarily have all the information
6 on its website itself but it often has links
7 to where the real, where the source material
8 is. In a similar way I think they are
9 building sort of a web-enabled database that
10 is open, transparent, science based, life
11 cycle based, so that anybody who has
12 sustainable, life cycle sustainability data to
13 contribute, like a new LCA analysis, they can
14 add it. It is very modular. Or they can add
15 links to it. Anybody that needs this
16 information and wants to be a critic of the
17 information that is there can easily go in and
18 see that information and add their comments or
19 extract information from it.

20 And Earthster.com, I encourage you
21 to check out Earthster.com, they are building
22 this around the Earthster.com platform, which

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 is a platform developed by Greg Norris who
2 teaches at Harvard and I think also at the
3 University of Arkansas. Next slide, please.

4 Here are some of the players.
5 Walmart was one of the major initiators of
6 this but now there are quite a number of
7 others, Proctor and Gamble, Unilever, PepsiCo.

8 You see quite a number of large corporate
9 players, as well as a number of universities
10 that are part of this consortium are helping
11 to develop different pieces of this puzzle.
12 And I guess next slide.

13 So now to the next major body.
14 Another multi-stakeholder body that is trying
15 to address issues that I mentioned before of
16 ecolabelling, eco certification, environmental
17 claims, Packard Foundation. So, if the
18 Sustainability Consortium is building the
19 Major League Baseball statistical database, if
20 you will, the Packard Foundation is sort of,
21 one could think of trying to figure out which
22 of those 500 professional baseball leagues is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 really working. Which league is actually
2 growing? Which one is large already, has a
3 lot of fans, is generating revenues, has
4 trusted statistics and so forth, and which
5 leagues are not. And why are those leagues, I
6 am saying leagues but to translate to the
7 actual situation and think ecolabelling
8 programs, eco certification programs. So
9 which of these leagues is growing, is robust?

10 Why are the ones that are the largest and
11 most successful, why are they so large? And
12 how can we scale them up to be even larger?
13 How could we create, in a sense, Major League
14 Baseball or the National Baseball League or
15 the American Baseball League? Those are the
16 questions that Packard is asking. And you see
17 the questions on the right.

18 There are sort of like, you can
19 almost think of them as a National Academy of
20 Sciences body. They are going to be in
21 existence for 18 months. It is more a
22 scholarly kind of enterprise, but drawing a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 lot of practitioners. Next slide, please.

2 So in terms of participants,
3 Packard Foundation is in the lead but the
4 Walton Family Foundation also is playing a key
5 role in the Resources Legacy Fund. A number
6 of universities are participating. NGOs,
7 Consumer's Union, those are the folks that put
8 out *Consumer Reports*, as I am sure you know, I
9 am sure. ISEAL is an interesting body that
10 should get some mention here. It is a
11 membership organization that includes the
12 Marine Stewardship Council Ecolabelling
13 Program, the Forest Stewardship Council
14 Ecolabelling Program, Fairtrade, I think the
15 Green Electricity Label, the Rainforest
16 Alliance label. So it is sort of an umbrella
17 membership organization covering quite a
18 number of these NGO-led ecolabelling programs.

19 So they are an interesting one. MSC is also
20 on there, Marine Stewardship Council, World
21 Wildlife Federation, World Resource Institute
22 and U.S. Green Building Council. Next slide,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 please.

2 McKinsey is participating, as is
3 the Business Council for Sustainable
4 Development. Mars is a major initiator and
5 leader of this and Dow Chemical is a
6 participant. USDA, Kate Lewis has
7 participated, as has USDA and others. Next
8 slide, please.

9 So the third major body out there
10 is the Keystone Center's Green Products
11 Roundtable. If the Sustainability Consortium
12 is building sort of the Major League Baseball
13 statistics or the Wikipedia, if you will, and
14 the Packard Foundation is coming out with a
15 report saying what leagues have been
16 successful and why and how do we scale them
17 up, the Keystone Center you could think of
18 their Green Products Roundtable as almost like
19 the Blue Ribbon Commission that Congress has
20 created saying help us. It is complicated out
21 there. It is bit messy out there. Give us
22 some recommendations to government, to the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 private sectors, to the standard development
2 organizations, the ecolabelling programs and
3 so forth. Tell us what we should do using all
4 of the information, all the resources, all the
5 stakeholders that exist, all the scholars out
6 there.

7 It is led by the Keystone Center
8 itself. Peter Adler, President and CEO with
9 Judy O'Brien, Suzanne Klein, Deborah Brody
10 Hamilton, and Eileen Miller playing key roles.

11 Actually, why don't we stay on this
12 slide for just one second.

13 I think there are probably four or
14 five things. The group is just forming. It
15 has been round just a few months but well, let
16 me back up. They were in exploratory mode for
17 maybe about a year and they did their formal
18 kickoff maybe a few months ago. And another
19 major meeting is coming up in about a week.

20 And it looks, it is not
21 predetermined yet but it looks like they are
22 going to try to address four or five topics.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 One is they will probably issue some
2 recommendations to the FTC on their
3 Environmental Claims Guides, maybe go beyond
4 just the traditional guides that they have.

5 Another thing they might explore is
6 does this world need the equivalent of a U.S.
7 Green Building Council, a U.S. Green Products
8 Council, if you will. As many of you know the
9 U.S. Green Building Council has brought a
10 great deal of order and sanity, if you will,
11 to the green building world. I see somebody
12 kind of putting their hand, kind of waving
13 their hand back and forth like maybe not.

14 Okay, well some people believe,
15 many people believe, that it has done some
16 good for the green building world. Maybe
17 there are some mixed feelings out there. My
18 guess is they will probably issue some
19 recommendations on ecolabelling programs and
20 eco certification programs. Do we need 500 of
21 them or not? Which ones really make sense for
22 institutional buyers and consumers to look to?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Next slide please.

2 Here are the key questions in
3 detail and I don't expect you to read them but
4 they are in the slides. I understand that
5 they will be shared. So, next slide.

6 The players. A number of major
7 players here, companies, 3M, Dow, Johnson &
8 Johnson, Office Depot, Staples. Office Depot
9 is playing a major role in the leading of this
10 enterprise, UL as well.

11 Let's see. So going to NGOs, a
12 number of key NGOs. ANSI, GreenBlue, Green
13 Electronics Council doing a lot of good work
14 with the EP Eco standard, GreenGuard, Green
15 Seal, and so forth, ISEAL again. Next slide.

16 University of Michigan, University
17 of Minnesota have been participants. We have
18 the institutional buyer represented by the
19 National Association of State Procurement
20 Officers. I participated in this group. If
21 it were my choice alone, I would have even
22 more institutional buyers represented. I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 think they are a key player in all this. The
2 Overbrook Foundation is also participating.
3 Next slide.

4 So I have a bunch of other slides
5 that are just sort of my back pocket slides in
6 case certain questions come up but that is
7 pretty much the conclusion of my talk. As you
8 can see, it is really a work in progress, in
9 terms of addressing the major issues out there
10 of eco-Babel, greenwashing, environmental
11 claims and so forth. And the jury is still
12 out in terms of what these organizations will
13 ultimately produce but I think it is probably
14 safe to say that they will all encourage
15 greater life cycle based sustainability
16 analysis, as we heard in the earlier talk and
17 we will be hearing from in the later talks.
18 So, I am open for questions.

19 MS. LEWIS: Stephan thank you.

20 MR. SYLVAN: Sure.

21 MS. LEWIS: That was a really
22 instructive overview.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. SYLVAN: Thank you.

2 MS. LEWIS: And I appreciate you
3 indicating that USDA, namely BioPreferred, has
4 sat in on some of the preliminary meetings
5 that the sustainability, I'm sorry, that the
6 Keystone Center's Green Products Round Table
7 and that the Packard Foundation has put
8 together.

9 Just by way of complete clarity,
10 these organizations have graciously invited
11 BioPreferred to attend their initial meetings.

12 In order to more formally and more
13 holistically join the effort, they are asking
14 for a resource commitment, which we haven't
15 yet made to any or all of these organizations.

16 And this is something that we continue to
17 explore and that we will consider as we move
18 this issue forward for our program.

19 MS. SCHAEFFER: I am Amy Schaeffer
20 with the American Forest and Paper
21 Association. We also know that ANSI had
22 pulled together a meeting last year sort of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 talking about this kind of more consensus-
2 based approach. Have you been talking to
3 them? Do you know where they are moving?

4 MR. SYLVAN: I unfortunately had to
5 miss that particular event. I was out of
6 town. But several people in the EPA
7 sustainable products consortium helped
8 organize that meeting. It was an EPA ANSI
9 meeting, as I understand it, maybe. It was
10 billed differently. And they attended and
11 spoke at that meeting. They are very more
12 closely connected with ANSI than I am. The
13 Office of Pollution Prevention and Toxics is
14 much more closely connected.

15 So, there are people at EPA who are
16 very much connected. ANSI has been a
17 participant in the Keystone Center's work. I
18 forgot the woman's name. Anne Caldas, I
19 think, she is, I think a part of that. And my
20 guess is that the other two entities have
21 reached out to NASI and are probably in
22 conversations with ANCI as well.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MS. LEWIS: This is Kate Lewis
2 again. And we did attend that meeting as
3 well. There was some lively dialogue on that
4 group's effort. And I do encourage, if
5 anybody is here in the room from EPA, OPPTS,
6 and wants to provide us with a summary.
7 Again, that meeting was held last April, so
8 there has been some time. There was a White
9 Paper that was put together based on the
10 dialogue at the meeting that outlined a plan
11 moving forward. Beyond that, I don't have an
12 updated summary. But if anybody in the room
13 has an updated summary as to ANSI's work in
14 this area, we sure would appreciate it.

15 MR. SYLVAN: Yes, they put a great
16 summary together on that. And I should
17 mention that many of us at EPA are going to be
18 going through a training organized by NIST on
19 standard development and conformity assessment
20 because those fields, if you will, are very
21 key to all of this. And many people at EPA
22 have been developing voluntary ecolabelling

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 standards over the years and you know, NIST
2 has quite a bit of expertise in this area.

3 And conformity assessment, a lot of
4 people are concerned about environmental
5 claims, whether or not they actually are
6 legitimate or not. And the world of
7 conformity assessment has a lot to offer, I
8 think, if you are asking those concerns.

9 CHAIR BUCKHALT: Stephan when you
10 talked about all of these things that are
11 going on, what is the timeline for reaching
12 some sort of, I guess, consensus or kind of an
13 agreement among all these folks about what
14 this is going to look like in two years, three
15 years. What are we looking at?

16 MR. SYLVAN: That is a good
17 question. The Packard Initiative is working
18 from an 18 month time frame, as is the
19 Keystone Center. They both claim an 18 month
20 cycle which both seems incredibly short and
21 incredibly long at the same time, if that is
22 possible.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 On the one hand, when you look at
2 what is happening, if you really follow this
3 stuff as many of you probably do, their work
4 is needed yesterday. It was needed two years
5 ago. On the other hand, 18 months to bring
6 all of these diverse stakeholders together and
7 come to some consensus about what to do is not
8 trivial. Just getting EPA and all the various
9 ecolabelling initiatives at EPA to agree on
10 what to do is beyond trivial.

11 The sustainability consortium I
12 think is in the pilot phase. They are hoping
13 to pilot three different product categories
14 and I don't know exactly where they are at but
15 I believe they are further along with the
16 packaged goods category and the food/ag
17 category and a little slower in the
18 electronics category. And for more
19 information, I would recommend contacting the
20 two leads, Jon Johnson or Jay Golden, about
21 that.

22 CHAIR BUCKHALT: I have a question

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that came in, I am going to turn it to you
2 because I don't know what our opinion is on
3 this. It asks about USDA's opinion so I am
4 going to ask you about EPA's opinion of
5 GreenBlue and the sustainable packaging
6 coalition, in particular. I will ask you that
7 question and I am not sure who would even
8 respond from USDA but what is EPA's opinion?

9 MR. SYLVAN: Well, --

10 (Laughter.)

11 CHAIR BUCKHALT: That is why I am
12 asking you.

13 MR. SYLVAN: You are asking me. Is
14 there anybody I can pass the buck to? I don't
15 think I can respond with EPA's opinion but I
16 do know that quite a few people at EPA are
17 very closely connected to GreenBlue and the
18 Sustainable Packaging Coalition. I think they
19 help form the Sustainable Packaging Coalition
20 and I do know that the DFE Program, the Design
21 for the Environment Program I believe works
22 pretty closely with GreenBlue.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And beyond that, I would have to
2 defer to folks in the DFE Program and I can
3 connect you to them or to Claire Lindsey who
4 does a lot of work on sustainable packaging in
5 the Office of Solid Waste.

6 CHAIR BUCKHALT: So EPA has got
7 input into what is happening. That is the
8 answer, I think.

9 Does anybody else have a question?

10 If not, we will take a short break and come
11 back and we will have two more speakers. And
12 then we will have a round robin and lots of
13 questions from the floor and lots of questions
14 from the phone lines, from the webinar. Any
15 other questions from the floor here because
16 the questions I have got here in my hand are
17 LCA-related and a bigger area, not here.

18 Thank you very much.

19 (Applause.)

20 (Whereupon, the foregoing matter went off the
21 record at 9:46 a.m. and resumed at
22 9:59 a.m.)

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR BUCKHALT: I will just make
2 an announcement that all the PowerPoints will
3 be available online. Everything that is said
4 here today at this meeting will also be
5 online. We will publish that at the
6 biopREFERRED.gov website. So, you can look
7 for that.

8 Again, if you are listening online
9 and you have not gone to the Webinar site, I
10 suggest you do. GOWEBINAR.COM. Webinar ID
11 311301721 and you can follow along with the
12 slide presentation.

13 And before I lose part of the
14 audience, I thought I would take this chance
15 to make an announcement that we will be having
16 a couple of meetings very, very similar to
17 this over the next few months. February the
18 24th we will be out in Riverside, California
19 having a meeting, a gathering. Not a public
20 hearing just a public meeting on complex
21 products. And the day before, we will be
22 doing some work with the folks, industry

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 types, bringing some GSA people, some Defense
2 Logistics Agency people talk about doing
3 business with the government. So, if you are
4 in the business of trying to sell to the
5 government, if you are interested, that is
6 February the 23rd and 24th. There will be
7 more information going out shortly on that.
8 It will also be on the website.

9 Again on March 31st and April
10 first, a very similar type situation as what
11 we are having here today, the 31st out in Ames
12 Iowa, at Iowa State University. We will be
13 having a discussion on doing business with the
14 federal government. A repeat, if you will,
15 of the program we are putting together at
16 Riverside.

17 And on April first, we will be
18 looking at intermediates, which is something
19 we have to do by the Farm Bill. So just make
20 note of that. I will hit that one more time
21 before we finish today just to let folks know
22 about that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Again, we will be holding the
2 record open, if you will, for another 30 days.

3 If you have comments, questions, just please
4 send us a note. Let us know what is on your
5 mind and we will have some time at the end of
6 today's program to go into some detail with
7 some of the questions that I have at the back.

8 If I have not asked it, don't go specifically
9 to the speaker who is up.

10 So, without further ado, let's
11 introduce our next speaker, Dr. Robert Anex.
12 He is a professor of agricultural and
13 biosystems engineering at Iowa State
14 University. He oversees the life cycle
15 analysis for the National Science Foundation,
16 Engineering Research Center for Biorenewable
17 Materials. Let's welcome Dr. Anex.

18 (Applause.)

19 DR. ANEX: The logo for the Center
20 for Biorenewable Chemicals is there in the
21 lower right-hand corner. And I do spend a lot
22 of time thinking about life cycle assessment.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 When we are trying to anticipate future
2 biorenewable chemicals, which is what that
3 center is all about, we are doing something
4 that is really very different than what we are
5 talking about here today. And I will try to
6 highlight some of those things, going forward.

7 I have to say that when faculty
8 members, when academic types give talks, we
9 tend to talk about science and engineering.
10 Right? There may be some disagreement but we
11 can get down to the facts and the figures and
12 talking about things that are really making
13 policy recommendations or trying to inform
14 policy makes people like me very nervous.
15 Because it is not quite so clear. It is not
16 quite so cut and dry.

17 So, it is always good to try to
18 start out with what do I think I have been
19 asked to address. So there were several
20 questions that were sort of posed to me when I
21 was invited. How should we think about
22 sustainability? How should we analyze the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 sustainability of biobased products? Should
2 LCA be used? If so, how should it be used?
3 Are more simplified approaches to be used?
4 And those are out of the *Federal Register*
5 announcement of this meeting but they were
6 also posed to me a little bit before that
7 appeared. So, I am going to try to address
8 those things. Next, please.

9 So the first one it seems to me is
10 problematic. I think we all know this but I
11 think it is worth saying that sustainability
12 is an essentially contested concept. And that
13 essentially contested is actually sort of a
14 term of art amongst a certain discipline. But
15 what it really means is that there is this
16 wide-spread agreement on the notion of
17 sustainability. But when it comes down to how
18 that might actually be realized, endless
19 disagreement. And I really enjoyed the talk
20 about all the different organizations that we
21 just saw and I despair of ever having a good
22 outcome of that. Some of those organizations,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 some of those labels may win but I don't know
2 how they could ever be held up as this is the
3 right measure of sustainability. They may win
4 politically. They may win for a variety of
5 reasons. Or they may win. They may carry
6 forward and be the accepted ones.

7 So it is my opinion, I teach a
8 couple of courses on sustainability, some
9 sustainable agriculture courses and it is
10 really interesting to see when you get 20, you
11 know, very fired with enthusiasm, I am going
12 to save the world graduate students in a room
13 there. Their visions of sustainability and
14 what they want to bring in to that definition
15 and what they want to make sure is included,
16 especially because we have students from
17 sociology and environmental science and
18 agronomy and engineering. Their conceptions
19 of sustainability are very different and there
20 is never agreement.

21 So, I think it is quite clear, my
22 second bullet there that whatever we want to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 call sustainability, it has to be very, very
2 clear what the purpose is and have clearly
3 stated objectives and then we can agree on
4 those. I think we should stop trying to call
5 it sustainability. We should say well these
6 are the things we are measuring. So there. I
7 have just done away with the first one. No,
8 we can't assess the sustainability. Next,
9 please.

10 So again, sort of setting the
11 stage, as I understand it, what are the
12 BioPreferred goals? So I went to the
13 BioPreferred website and I pulled down. So I
14 have added the emphasis. But the aims are to
15 increase the purchase and use of renewable
16 environmentally friendly biobased products
17 while also providing green jobs and new
18 markets for farmers, manufacturers, and
19 vendors.

20 So, I have added the emphasis there
21 that we are looking for renewable and
22 environmentally friendly because that is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 mostly what we seem to be talking about here
2 today. We would like to, we should include
3 other things like well what is the job
4 creation potential. What are the new markets
5 created? We tend not to talk about those
6 quite as much because they need to be
7 included. So what I am really talking about
8 is how should we assess what is renewable,
9 what is environmentally friendly.

10 But notice that the word in the
11 first line of we want to increase. So I am
12 going to claim by extension my second bullet
13 there that what we are talking about, what the
14 goals are, is to increase the production of
15 biobased products, to create incentives for
16 the development of new products and hopefully
17 to improve the quality, the environmental
18 quality of the renewability of those products.

19 So if that is the case, if I am
20 right about that and I may not be, but if I am
21 right about that, we are talking about not
22 products that are out there in the world

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 today. We are talking about -- well or maybe
2 they are but we want to expand the production
3 of those products. So new production. Right?

4 Enhancing, enlarging those facilities or
5 enlarging the utilization of those facilities
6 that makes those products, creating new
7 products, and creating greener, different,
8 better products.

9 Do we agree on that maybe? All
10 right, then I am going to go forward with the
11 assumption that that is the case. Next
12 please.

13 So what we have been using and what
14 I spent a lot of time playing with is life
15 cycle assessment. And I got kind of a busy
16 slide here that talks about life cycle
17 assessment and you can read it faster than I
18 can read it to you. So, I won't bother but I
19 have highlighted a couple of things.

20 So, you know, the full life cycle
21 from cradle to grave. Trying to avoid problem
22 shifting or some of the objectives of LCA.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Typically, we are trying to use average data.
2 So we argue about things. In the reviews of
3 LCAs I do spend a lot of time looking at the
4 quality of the data and where the data come
5 from and which power grid data did you use?
6 Right? Did you get your right region? Do
7 read the right averages of the hydro versus
8 the nuclear versus the renewable? Because
9 those things have impact. So average data.

10 The next bullet, the third bullet,
11 is sort of an important one. Typically we
12 assume that we have infinite elasticity that
13 the demand for this product doesn't change the
14 economic production of other goods and
15 services. So basically the demand for the
16 good under-analysis is met by the production
17 of that good. Right? The functional unit is
18 one unit of a solvent and that solvent is
19 created. There isn't substitution for other
20 goods or services or ways of accomplishing
21 that functional, well the function of that
22 product.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 So, and typically the life cycle
2 inventory model doesn't include things outside
3 of that life cycle from cradle to grave. And
4 all of those things, which are 90 some-odd
5 percent. I don't know, 98 percent of the LCAs
6 that have been done and are done are termed
7 attributional because it is production that is
8 going on out there in the world today. And
9 what are the attributes of that? What are the
10 environmental impacts of producing those goods
11 and services, through this fairly detailed and
12 rigorous method of analysis called life cycle
13 assessment?

14 So there has been debate mostly in
15 the last six or seven years. It really goes
16 back 20 years but it has really been front and
17 using the terminology that I am using here
18 today since about 2001 to 2003. There is a
19 whole other world of LCA called consequential
20 LCA. So recognizing, and you can see I have
21 led into this, recognizing that products are
22 part of life cycles of industrial systems.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And their part of economic systems has led to
2 the realization that in certain cases, we want
3 to look at the consequences of a technology.

4 And I led you into saying what we
5 want are new technologies, and advances, and
6 changes. So I would say that when we are
7 talking about policy, quite often what we are
8 really interested in is consequential LCA. I
9 have been involved a little bit in the low
10 carbon fuel standard debates and the EPA's
11 Renewable Fuel Standard II under ESA. And
12 that is clearly consequential. We are talking
13 about large productions of biofuels beyond
14 where we are today. Right? We are looking
15 forward to -- well, we don't need to go into
16 biofuels at the moment.

17 So we are interested in how an
18 increase in demand is met in the LCA. So I
19 gave you just a very simple little example.
20 If soybeans are used to make a polymer, and we
21 are talking about significant changes in the
22 demand, then the price of soybeans goes up and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 as a result soybean production increases in a
2 number of ways. It isn't necessarily the way
3 soybeans are produced on average and in the
4 mean in the United States today.

5 And many of you will be aware of
6 Tim Searchinger's paper in science which
7 talked about, was looking at biofuels and was
8 looking at exactly this. Increasing the price
9 of corn through corn ethanol decreases the
10 production of soybean in the United States,
11 increased the soybean price, and we start
12 producing soybeans in Brazil and tearing down
13 rain forests. And in the process, emitting
14 more CO₂, enough CO₂ that it gives us a
15 negative impact of making that ethanol in the
16 first place.

17 Yes, I know and that was a simple
18 consequential change. Now, there are all
19 kinds of reasons why that was not a very good
20 analysis. The models he used are the FApre
21 models that are produced at Iowa State
22 University and they were sort of horribly

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 misused. But those of you who have fought
2 your way through that paper or heard the
3 debate in the press, that gives you a good
4 example, a good mental anchor for that is what
5 we are talking about when we are talking about
6 indirect effects. It isn't just what is the
7 CO2 footprint and the other environmental
8 impacts of producing corn in the Mid-West to
9 product corn grain methanol. It is all the
10 other indirect effects of that economic
11 activity, pulling in that corn, raising the
12 corn price, has a whole bunch of other
13 impacts.

14 The increase in the price of
15 soybean meal might also reduce the number of
16 hogs we produce, which in fact it has done in
17 the Mid-West. And that has significant
18 greenhouse gas effects. So, should those be
19 tied back to the production of corn grain
20 ethanol? Well, yes, in fact. The argument is
21 and I agree with it that in fact it should be.

22 But you can see that it is very, very

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 difficult to do that. Next please.

2 So, elaborating slightly on changes
3 in the prices. And I have to say that
4 biobased products, a lot of their
5 environmental impacts come from the
6 agricultural production. An agricultural
7 production, unlike other industrial
8 production, things like petroleum based
9 products, are really quite sensitive to, and
10 that is my fourth bullet there, differences in
11 the average versus the marginal.

12 So, if you are looking at
13 consequential LCA, you no longer want the
14 average data. You want the marginal. When I
15 increase demand here, where does that next
16 bushel of corn, bushel of soybeans, gallon of
17 soybean oil come from? And what are the
18 impacts of that?

19 And agricultural systems are very
20 sensitive to this. There is a lot of
21 literature. And I will just leave that.
22 There are some references at the end of my

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 talk and I can give you more if you are
2 interested.

3 But when prices change,
4 agricultural production could increase in
5 three different ways. Intensification, more
6 fertilizer, more tractors, higher seeding
7 rates, those sorts of things. Substitution,
8 we can change the crops that a farmer plants.

9 If the prices of one commodity are higher
10 than another, he/she/they will tend to grow
11 more of that. I have their corn soybean
12 shifting to corn-on-corn but that is just an
13 example. And the other is, of course,
14 extensification bringing new land into
15 production, which we had the idea of that in
16 Brazil, clearing rain forest to produce more
17 agricultural production. But we have it in
18 the United States. A lot of land has come out
19 of the conservation reserve program as the
20 price of corn has gone up. And the
21 environmental impact of products produced on,
22 for instance, what was in the conservation

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 reserve is dramatically different than the
2 average farm land in the United States.

3 If you look across the state of
4 Iowa, for example, corn, the highest producing
5 corn is pretty much, in central Iowa it is on
6 flat land, erosion isn't a major problem.
7 There is deep top soil. You know, it is the
8 greatest place in the world to product corn.
9 Right? I Iowa is very proud of that. I am a
10 Californian. I get in trouble sometimes for
11 throwing stones at corn.

12 But it is very, very different.
13 The land that is in the conservation reserve
14 program is typically highly erodible. it is
15 steeper slopes. It is less top soil. And if
16 you are tearing up that ground and that where
17 your marginal production comes from, the
18 environmental impacts are very, very
19 different. And as you intensify and add more
20 fertilizer to produce, anyway, the point is,
21 the agricultural systems are very sensitive to
22 that change between average and marginal. So

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 consequential LCA and, therefore -- well,
2 consequential LCA is important but the impact
3 on biobased products is significant. At least
4 in certain instances, they are significantly
5 made of biobased materials. In other cases,
6 not so much. So clearly there is a big
7 variation here across both the volumes that
8 are produced, the locations that are produced
9 et cetera.

10 Marv made a comment about trading
11 off water versus soil carbon or carbon. And
12 there, too, the water used in producing an
13 agricultural product is very, very different
14 regionally. In Central Iowa, it is all rain-
15 fed corn. And so you might say well producing
16 the corn, there is no water uptake. Well of
17 course there is in the plant but it is coming
18 out of the sky anyway. But you go a few
19 hundred miles to the west into Nebraska and it
20 is irrigated corn and there is fossil fuels
21 associated with that. It is fossil water.
22 The impacts are very, very different across

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 fairly fine spatial scale.

2 So what you have already sort of
3 picked up on is my last bullet, that if you
4 are going to do consequential LCA and I have
5 put it in terms of crop production here but
6 really it applies to marginal production of
7 any sort of good or service is that you need a
8 whole bunch of data now. And these data are
9 hard to come by.

10 The elasticity of land
11 transformation, the elasticity of crop yield
12 due to intensification, I mean, all of these
13 things are built into economic models but the
14 people who make these models will tell you
15 that they are hard to come by. Next please.

16 So here is another busy slide about
17 consequential LCA. This sort of summarizes
18 how it differs from attributional LCA, that we
19 are really interested in changes in response
20 to changes within the life cycle for demand
21 and for technology. As you think about a
22 different technology coming into play and it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 is easier to think about something like an
2 electric vehicle or a fuel cell vehicle as
3 opposed to, you know, most of us don't have in
4 our minds what a biobased solvent versus a
5 petroleum solvent means.

6 But if you think about something
7 like an electric car coming into play, it very
8 much changes what goes into making that car,
9 what goes into maintaining and using that car.

10 So, there is a whole bunch of different
11 economic activity.

12 So technology change has very
13 significant changes elsewhere in the system
14 that should be attributed to that new product.

15 So we are interested in marginal things. For
16 the most part, we don't worry about allocating
17 between co-products because we try to bring
18 everything into the system.

19 And the last bullet is really the
20 kicker, that typically we are using some sort
21 of an economic model or other tool that allows
22 us to quantify that causal relationship

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 between changes in supply and demand and the
2 environmental impacts. And the models, the
3 economic models that we tend to use weren't
4 made for that purpose. I mean, they were
5 meant to model economic activity but not the
6 consequential environmental activity.

7 And so where we have enough trouble
8 fighting with an individual process in an
9 attributional LCA, we now need to do that for
10 a wide range of products that we don't have as
11 much time to study in detail. All right? So
12 think about the debate that came out of the
13 searching or article, well how much does a
14 change in soybean price really affect
15 deforestation in Amazonia? Well, we don't
16 know those numbers very well because we
17 haven't been studying those in that way.

18 The paper that he used was not
19 meant for that purpose at all. He sort of
20 took a sociological study that happened to
21 have some numbers that he could divide one by
22 another and get for this many dollars I get

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 this much rain forest destruction but that
2 wasn't the purpose of that study and that is
3 one of the reasons that that was not done so
4 well.

5 So, sort of to recap what I have
6 said about LCA, attributional neglects many
7 of the important impacts of technological
8 change and increases in demand. So, sort of
9 incomplete for a lot of what we are talking
10 about. It is often not that policy relevant.

11 But it can be more accurate often because we
12 can spend a lot of time looking at those
13 individual processes.

14 On the other side, consequential
15 LCA takes these things into account but it is
16 data intensive and still immature so it is
17 sort of complete but inaccurate, in
18 comparison. Next please.

19 Okay. So shifting things slightly,
20 if we can do a consequential LCA, maybe on
21 even just a limited range of impacts, how do
22 we use it in decision making? So what we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 would love to have, right, is we would like to
2 have these sorts of performance indicators,
3 economic and environmental indicators that are
4 calculated by mathematical models very
5 accurately and we are going to inform the
6 policy makers and the all stakeholders of all
7 the feasible alternatives. We are going to
8 come up with a non-dominated set of these
9 alternatives and we will understand all the
10 tradeoffs. Of course, that is insane. Right?

11 I mean, we can't begin to do very many of
12 those things very well at all.

13 But that is sort of the way I think
14 we tend to think about making policy, a sort
15 of rationalist approach. We are going to
16 provide this information. We are going to
17 understand the tradeoffs. The stakeholders
18 will be involved with the policy makers and
19 will make the right choice.

20 Now, I get in trouble for doing
21 this but I took this from the BEES 4.0. When
22 you have got a lot of indicators, this is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 really, really difficult. These are probably,
2 if you look down that list, and again you can
3 read them quite quickly, you see all of these
4 things, habitat alteration and fossil fuel
5 depletion and eutrophication. And for an
6 individual, you probably understand in some
7 way how you are going to trade off one of
8 those versus another in making a product
9 choice. But from a societal standpoint for a
10 variety of reasons but I will refer you to Ken
11 Arrow's what is called the impossibility
12 theorem, there is no social welfare function.

13 There cannot be one set of social tradeoffs
14 that define what provides an optimum for a
15 society. There really is no social way that
16 comes up with some sort of an optimal solution
17 that weighs these things off against each
18 other.

19 The single score in BEES comes from
20 those numbers on the right which is trying to
21 create an equivalence. Right? That is the
22 normalization value between all of those

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 things, which is done through a survey. And I
2 am sorry but there is just no theoretical
3 basis for that having any validity whatsoever.

4 But it seems to me that this is
5 just really problematic. I am definitely one
6 of those people that Marv referred to who says
7 I don't know what you do with this. I have
8 enough trouble as an individual trying to
9 weigh all that things and make a decision but
10 to make a decision for society could keep
11 throwing in more. And these are just the
12 simple ones -- well they aren't so simple but
13 these are the environmental ones that we can
14 get our hands on. Right? Wait a minute.
15 What about social? What about economic? What
16 about, you know, I want all those other things
17 in the mix. And I think it just becomes
18 problematic.

19 So in reality, our cognitive and
20 analytical resources to be able to deal with
21 that are very limited. I mean, we leave out
22 all of those steps in there of quantifying all

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the tradeoffs and having the debate amongst
2 all of the stakeholders and the policy makers.

3 And what reality the is is that we have these
4 conflicting objectives that represent the
5 values of lots of different participants.
6 There is no optimal solution and, at best, we
7 are satis-ficing. That is a nice term that
8 combines sacrificing and satisfying. So we
9 are going to come up with some sort of a
10 satisfying solution. We are not going to do
11 some sort of comprehensive planning. And we
12 are just going to muddle through. And
13 muddling through is referring to Charles
14 Lindbloom, who is a planner who talked about
15 making a series of successive limited
16 comparisons. And that is really what we can
17 do from a planning standpoint. On a limited
18 number of criteria, we can make a series of
19 successive comparisons, make choices, and keep
20 muddling our way along.

21 So what we are really looking for
22 are sort of the most preferred, rather than

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the best. Thank you. Marv kept talking about
2 optimizing this and optimal that. I don't
3 think there is even a ghost of a chance of
4 coming up with something that is optimal.
5 What we are going to come up with is sort of
6 our most preferred solution. And to do that,
7 I think we have to have some narrow clear
8 objectives. A degree of comprehensiveness is
9 possible.

10 So yes, if we want to make sure
11 that we are going to pursue, and I will just
12 throw some things out, pursue carbon
13 footprint, well all right, you can put some
14 limits and say at the same time you have to
15 have minimal performance in water intake or
16 two or three other categories. If those are
17 the important tradeoffs that concern you in
18 that product category.

19 So I think a degree of
20 comprehensiveness is possible and necessary.
21 And then we are really talking in the policy
22 framework, not in LCA. Because give me the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 time and the money, I will give you an LCA
2 that does as many categories as you want but I
3 don't know that that is terribly useful in the
4 decision making process. And I made reference
5 here to the Tinbergen Rule that basically says
6 that in making policy, you need a policy for
7 every end, every social end that you are
8 trying to achieve.

9 And so if you think back to that
10 BEES list, if what you want to optimize is
11 that BEES score, well then that is your policy
12 statement. Whatever weighting you have on all
13 those different inputs, that is what you are
14 trying to achieve. Which, I don't know quite
15 how you come up with that. Next please.

16 So the BioPreferred, again, going
17 back to the website, has some major benefits
18 listed. Climate change impact reduction,
19 energy environmental security, economic
20 development, well coming up with fairly good
21 metrics of those things seems quite reasonable
22 to me and I think those are things that, for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the most part, we can address, and making the
2 attempt a whole lot bigger to bring in a whole
3 lot more things I think may be an awful lot of
4 work for not a whole lot of use in the policy
5 making or decision-making arena.

6 So just to recap the things I have
7 said, consequential LCA is often more
8 appropriate, I think, for policy making if
9 what you are interested in is increasing
10 biobased product demand, technical
11 improvement, technological improvement, and
12 new technology dissemination. It does require
13 further development from where it is today but
14 it is improving rapidly and is really coming
15 along quite for a limited number of things
16 like climate change forcing.

17 I am going put in a plug for carbon
18 footprint and I know our next speaker will say
19 a lot more about it in just a moment but
20 carbon footprinting is really a simplified
21 LCA. The same LCA community is doing it. In
22 fact, the ISO Committee 207, I think, is doing

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 a carbon footprinting. The PAS 2050
2 guidelines have been much more specific. LCA,
3 ISO standards are very, very broad to allow
4 all kinds of behavior. And the carbon
5 footprinting has said things like end-of-life
6 with biobased materials are very, very
7 important and they have tightened up those
8 guidelines so there is a much more uniform way
9 of handling it. You know, you can't just say
10 ah well this biobased product is recyclable so
11 I get all these credit for recycling. You
12 have to document that there actually is
13 recycling. And anyway, there is a whole bunch
14 of steps associated there with allocation I am
15 going to quickly get through here.

16 So, I think that biobased product
17 policy should pursue a limited set of clearly
18 defined objectives. I think there is a pretty
19 good set there right now. Metrics for those
20 maybe need to be enhanced somewhat. I think
21 the signals to the producers have to be clear.

22 What constitutes an improvement and what is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 it worth to those people? I mean, if you want
2 to stimulate behavior, you have got to make a
3 really clear signal. It can't be a muddy
4 dwellers these 45 things and you can game the
5 system somehow. You have to have a clear set
6 of signals that people can respond to. I
7 think having thresholds where you meet some
8 limit is very, very limited. Because once you
9 have met that, there is no incentive to go any
10 further and it doesn't create an incentive for
11 the sort of incumbents. Those are already on
12 the scene. Because you really want to create
13 a pressure here for even the other products
14 that you are creating competition for. The
15 non-biobased products. You want to create an
16 incentive for them to improve as well. And I
17 think I just have references next.

18 So you can see a bunch of these
19 people that I have referred to in my slides as
20 we go forward, when you look in there.

21 CHAIR BUCKHALT: So I will ask a
22 question. What I think I hear you saying is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that BEES may not be the best way to sort of
2 get at having some sort of an LCA. That you
3 think there may be other methodologies that we
4 ought to consider. Am I putting words in your
5 mouth?

6 DR. ANEX: No. That is what I said
7 without being quite so explicit about it, yes.

8 CHAIR BUCKHALT: And what would
9 that recommendation be? Is there a
10 methodology or methodologies that you would
11 suggest?

12 DR. ANEX: Well, indeed. So I
13 obviously think that if you are talking about
14 policy where you are trying to make these
15 sorts of changes, a consequential form of LCA
16 is appropriate, which BEES doesn't currently
17 do. And I think that a consequential form
18 with a very limited set of impact categories
19 like carbon footprinting would be appropriate.

20 So carbon footprinting has a
21 consequential sort of framework is what I
22 would recommend. He is laughing at the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 question.

2 CHAIR BUCKHALT: From the author of
3 the BEES or the individual that runs the BEES
4 Program.

5 DR. ANEX: See, that is why I
6 wasn't being explicit about it. She is going
7 to come find me.

8 CHAIR BUCKHALT: She is. Now, she
9 just sent in a question. Bobbie Lippiatt with
10 NIST. Are you arguing for consequential
11 carbon footprinting?

12 DR. ANEX: Yes, absolutely, Bobbie.
13 She was out of sync. We beat her to it.
14 Yes, that is exactly what I am arguing for.

15 CHAIR BUCKHALT: I have a question
16 here. Thank you, Bobbie, for that question.
17 I think you got the answer there. So, Robert
18 is fairly strong in what he believes. Yes,
19 sir, go ahead and introduce yourself.

20 MR. FEELEY: Good morning. Tom
21 Feeley from Roofing Resources as well as Green
22 Building Solutions and Supplies. Just to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 reinforce what you are saying, case in point,
2 we have a soy-based roofing product that has
3 done exceptionally well. And the additional
4 benefits to it are not only the initial cost
5 savings but it also is that we are not tearing
6 off the existing roof and that is an
7 unforeseen consequence. And it is extremely
8 expensive and it is probably one of the
9 largest waste streams that we produce in this
10 country.

11 So there is a lot of other
12 unforeseen advantages to the bioproducts and I
13 don't know how you are going to get your hands
14 around the value of that. But a longer life
15 cycle just shows you how much more energy is
16 saved. And it is in a grand scale. To tear
17 this roof off and to replace it with a new
18 roof that was made from petroleum oil, not
19 only is that the short-term cost, the long-
20 term cost is, what do we do with it. We have
21 to take it out of here. And look at all of
22 the energy we spent putting it here.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 These new products, the bioproducts
2 that can be reapplied every 25 years. We have
3 a 25-year one we have just come out, soon to
4 be 30-year that can be redone and redone. And
5 that would be long-term additional advantages.

6 DR. ANEX: I didn't hear a question
7 so --

8 CHAIR BUCKHALT: Length of time I
9 think was his issue. That you have to look at
10 it over a longer time.

11 Let me ask you one final question
12 that came in. What are PAS 2050 Guidelines?

13 DR. ANEX: So PAS is the Publicly
14 Available Standard. It comes out of Europe.
15 The next speaker, I am sure, will cover that a
16 little bit more.

17 So PAS 2050 are carbon footprinting
18 standards that come out of the British
19 Standards Organization, British Standards
20 Institute.

21 CHAIR BUCKHALT: Again, folks, a
22 nice round of applause.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 (Applause.)

2 CHAIR BUCKHALT: Thank you very
3 much, Dr. Anex, for taking those questions and
4 being so forthright. We kind of tied you down
5 there a little bit. I don't apologize for
6 that. We do that, occasionally.

7 The next individual who will be
8 speaking to us is no stranger to the LCA area.

9 Dr. Ramani Narayan is a University
10 distinguished professor of chemical
11 engineering at Michigan State University.

12 Dr. Narayan also chairs the ASTM
13 Committee on biodegradable and biobased
14 products, ISO DC 61. Please welcome Dr.
15 Ramani Narayan.

16 (Applause.)

17 DR. NARAYAN: Thank you. I am glad
18 Robert went before me. So he set the stage
19 correct. And so I can focus now on what are
20 the consequential LCA that we need to focus
21 on.

22 So the title of my presentation is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 what I call a workable model for environmental
2 assessment of BioPreferred Products, which is
3 the subject of this.

4 And I am going to focus on two
5 metrics. The first one is to use bio content
6 or biocarbon content for reporting carbon
7 footprint reductions. All right? That is
8 directly related to the global warming
9 potential impact category. The other one,
10 which again Robert mentioned, was the end-of-
11 life. These are the two major impact
12 categories that can be captured, communicated,
13 and clearly show a value proposition and that
14 is end-of-life strategies, what happens to the
15 product after use when it enters the waste
16 stream. So we are talking about
17 biodegradability in the context of a disposal
18 system, like composting, recycling or in
19 energy recovery. So those are the two focus
20 points.

21 So just like Robert did, I put up
22 this slide when I was asked to talk well what

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 is the agenda or the focus of this meeting. I
2 took this out of Ron's wonderful summary of
3 what he is expecting this meeting to do and
4 you will notice that it is titled LCA and here
5 we are talking about everything but LCA right
6 now.

7 And the lines words identified in
8 red is critical. It is to assess new
9 procedures and guidelines for evaluating the
10 sustainability of biobased products and the
11 other component which was being asked for was
12 the question of what happens to the pending
13 USDA 35 biobased products? What are the
14 requirements, the environmental attributes
15 which is needed? So the question which is
16 being addressed, if I turn it around, is what
17 is the environmental value proposition for
18 biobased products? Right? That is what we
19 are really talking about. And how do you
20 calculate and report it? Do I need all those
21 impact categories and all the complex or is
22 there a simpler workable model that can

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 communicate the value proposition? That is
2 number one. Number two.

3 And I propose, and this is a part
4 of what is already in the BioPreferred
5 Program, is to use the biocarbon content,
6 essentially carbon footprinting to document
7 verifiable CO2 reduction. So that is right up
8 there is a methodology already in place in the
9 BioPreferred Program, which allows you to
10 quantify and validate CO2 reductions. And the
11 next one is what is the end-of-life strategies
12 for this product? So, in a nutshell, that is
13 what we are talking about. The end-of-life
14 strategies would be biodegradability or
15 chemical recycling or energy recovery, which
16 has to be identified.

17 So, what didn't come up in there
18 was the third one was we want to, therefore,
19 frame the question and Robert already put it
20 up there, which is carbon footprinting. So,
21 what is this all about? If you really look at
22 the debate, is managing carbon. That is the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 burning issue of the day. I mean, everywhere
2 you go, you are talking about what are you
3 doing to reduce your carbon footprint?
4 Whether it is the company's, whether it is
5 your country's, it doesn't matter. It is
6 asking the question, what steps or things you
7 are putting in play to reduce the carbon
8 footprint.

9 And of course carbon footprint
10 reductions, just so that we are all on the
11 same pages, equal into the CO₂ reductions,
12 which is typed in terms of LCA terminology,
13 the impact category, global warming potential.

14 And so I am going to focus on this carbon
15 footprint value proposition.

16 So very simply put, this is the
17 first question which was being asked was what
18 is the value proposition for biobased
19 products? And do I need to prove the
20 environmental value by doing a full-scale LCA
21 or are there workable approaches to document
22 and quantify this value proposition?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And simply put, and this is
2 basically the fundamental, saying that using
3 biorenewable feedstocks as opposed to
4 petroleum fossil feedstocks. To manufacture
5 our products will reduce the product's carbon
6 footprint, provided everything else is equal
7 and all these other things are taken into
8 consideration. But, it will allow you to
9 reduce heat trapping CO₂ and minimize global
10 warming/climate change issues which everybody
11 is talking about.

12 That is the value proposition and
13 then the question comes up, how do I
14 communicate, quantify, and is this real? That
15 is really what we want to ask. But this is
16 your hypothesis. Remember as a professor you
17 tell your student, you have to first put the
18 hypothesis first and then prove it or disprove
19 it. So, this is the hypothesis which
20 basically says that the BioPreferred biobased
21 products do move you forward in carbon
22 footprint reductions. And now let's talk

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 about why and how and that.

2 Now end-of-life is an integral part
3 of the biobased products and the biodegradable
4 products value proposition is nothing to do
5 with biobased. This is something I do want to
6 bring it up because it is always
7 interchangeably used. All biobased products
8 are not necessarily biodegradable. All
9 biodegradable products are not necessarily
10 biobased. But biodegradability is engineering
11 to some, many of the biobased products where
12 necessary and it is an end-of-life option to
13 completely remove short-life single use
14 products from the environmental department in
15 a safe and efficacious manner and you are
16 harnessing the power of microbes to do that.
17 The key phrase is complete and the key phrase
18 is it must be in a short time frame.

19 So, two points on the
20 biodegradability aspects. One, if I am going
21 to talk about biodegradability, I had better
22 define my disposal environment. So

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 biodegradability in the abstract has no
2 meaning whatsoever and it has been misused in
3 that way in a number of products. Right? So,
4 I must define it. Is it composting? Is it
5 anaerobic digestion? Is it marine? Is it
6 soil?

7 Two, I must provide the time to
8 complete biodegradation. Everything will
9 biodegrade, given time, especially if it is an
10 organic material. It is a question of how
11 long do you want to wait for it. Right? Do
12 you want to wait 50 years, 20 years or not?

13 And the key to that is the issue
14 that if we do not ensure complete removal from
15 the environmental compartment, there are
16 consequences to it. And that consequences
17 have both health and environmental attributes
18 associated with that. That means degradable,
19 partially biodegradability or will degrade or
20 just blanket statements are acceptable and
21 that is a very important point to be kept in
22 mind.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 So let's go to fundamental
2 terminology because it is important. We have
3 been talking very broadly. This is the
4 BioPreferred biobased program. And so how do
5 we define what is a biobased product? And it
6 is a very simple definition. It is an
7 organic material that contains in whole or
8 part biogenic carbon, carbon from biological
9 sources. That is a very simple, fundamental
10 definition. This is part of the 6866 ASTM
11 Standard and the terminology associated with
12 that.

13 Organic material, and therefore
14 when you talk about a biobased product, we are
15 referring to the use of biomass or crop
16 feedstock and call it the new carbon, versus
17 using petroleum fossil feedstock. That is
18 really what we are talking about in terms of
19 biobased product and it does relate directly
20 to our hypothesis if it says it will reduce
21 carbon footprint.

22 So when we talk about biobased

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 products as it exists today, we are really
2 talking about an organic material in which the
3 carbon is from biological sources. So you
4 have to ask the question, what is an organ
5 material? An organic material is nothing but
6 a carbon containing compound, which is
7 attached to other carbon and other elements.
8 That is the IUPAC definition.

9 So when we talk biobased, when we
10 talk about CO₂ reduction, when we talk about
11 footprinting, we are talking about an organic
12 material where the carbon comes from
13 biological sources.

14 And therefore, we can define a
15 biocarbon content, which is going to be useful
16 for other purposes, as the amount of biogenic
17 carbon to the total organic carbon present in
18 that product. That gives you the amount of
19 biological carbon content of the product and
20 this is the percent of biobased content and
21 the ASTM Standard, which is a standard method
22 for determining biobased content forms the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 basis for the BioPreferred Program
2 procurement. But these are fundamentals of
3 that.

4 So, that is the terminology and now
5 let me take this forward. What is the
6 fundamentals and rationale for it? This is,
7 many of you may have heard me say this but I
8 want to propose, what is a value proposition?

9 Why is incorporating biocontent useful at
10 all, if any? And then how do we measure and
11 quantify it or do we need to have the total
12 environmental attributes? What is simply,
13 take you back to high school chemistry if you
14 ever can go that far back, you start in an
15 organic form and you convert it to organic
16 carbon. That is your fundamental first step
17 in the biological carbon cycle.

18 So the organic carbon, which is
19 present, is converted to fossil carbon over
20 millions of years. So there is nothing
21 unnatural about the fossil petroleum carbon.
22 So the debate or argument which sometimes we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 still make is well mine is renewable feedstock
2 and that is fossil feedstock. So fossil is
3 bad, renewable is good because I say so.
4 Right? Bio is good. Right?

5 So there has got to be a better
6 scientific argument for that. And it is not
7 that fossil carbon is still a part of the same
8 carbon cycle. It has got to do with what I
9 call the rate and time scales of utilization.

10 The rate of carbon fixation to organic carbon
11 on the front end of that is in one to ten
12 years you plant a crop, you plant another crop
13 next year or you have a wood plantation,
14 whatever is that, and that takes millions of
15 years to go to fossil use. We use it to make
16 our materials, chemicals and fuels. And I
17 ultimately put it back into the atmosphere as
18 CO₂.

19 So, if I use a biobased feedstock,
20 I have the ability to manage carbon such that
21 the rate and time scales of carbon fixation to
22 organic carbon equals the rate or in harmony

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 or in balance with the rate and time scales of
2 use and putting it back into the atmosphere
3 as CO₂. In other words, I am carbon neutral.
4 Right? That is the fundamental value
5 proposition for a biobased product. And I
6 don't think you need to justify it in another
7 way or so or whatever. This is just a broad
8 view perspective.

9 The rate and time scales of carbon
10 fixation to fossil fuels or fossil resources
11 is in millions of years and the rate and time
12 scale at which we use it and put it back is
13 in the one to ten, 15 year time frame. It is
14 simple math tells you it is not sustainable.
15 It is not in balance. That is the fundamental
16 value proposition for biobased products.

17 So we are talking about biological
18 carbon cycle and you will note that we are
19 focusing on organic carbon, biological carbon.

20 I wonder the difference shared between
21 inorganic carbon because this is a question
22 which has come up many times in the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 BioPreferred carbon. If I throw calcium
2 carbonate, isn't that also biologically fixed?

3 Because CO₂ is sequestered by the oceans, it
4 is converted to bicarbonate, it goes to
5 calcium carbonate and I am using that calcium.

6 So I have sequestered CO₂, so you must give
7 me credit.

8 Well the BioPreferred Program or
9 the biobased products, I won't speak for the
10 USDA's BioPreferred Program, but it involves
11 biobased products, is essentially directed to
12 the rate and time scales of carbon fixation,
13 use and putting it back. That is the
14 biological short time scales we are talking
15 about. So anything which goes along, then it
16 is the same as fossil fuels. Right? There is
17 no difference between that so we are not going
18 to keep the inorganic carbons into the
19 calculation. We are focusing primarily on
20 organic carbon and biobased organic carbon.

21 So, I want to take this carbon
22 concept of rate time scales, the use of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 biocarbon versus fossil carbon and divide up
2 my carbon footprint and this is appearing in
3 the PAS 60 Guidelines which was alluded to
4 earlier, that I want to split that into what I
5 call material carbon footprint and process
6 carbon footprint. And this is where the
7 confusion is coming up today, that we are
8 mixing everything together and we want one
9 simple answer and that is it. And I am glad
10 that in the earlier talk you saw an example of
11 how complex and complicated it can be. Right?

12 And of course, there are other
13 impacts. That is not to say that carbon
14 footprint is the only impact category. There
15 are other environmental impact categories. So
16 I have divided it up into material carbon,
17 process carbon, and environmental footprint.

18 I want to illustrate this with
19 actual examples because that is much more
20 useful. Right? That is what a professor
21 always does, right, gives you actual examples.
22 Right?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 So let's take polyethylene, which
2 is on the left-hand side. And what we are
3 really talking about in biobased, in terms of
4 value proposition is replacing that carbon in
5 red from coming from a petroleum feedstock to
6 a biological feedstock. That is all we are
7 talking about. I can make the same
8 polyethylene today from sugar cane from corn,
9 whatever, in the same way that I can make
10 polylactic acid from there. So what have I
11 done? I have just replaced the carbon in my
12 product from petro to bio and I am asking the
13 question what is the impact of that. Can I
14 calculate it? Can I compute it? Can I
15 communicate that value proposition to my
16 stakeholders? That is the number one question
17 we are talking about.

18 And two, where the LCA and all the
19 things comes about is the process carbon. I
20 have to convert my feedstock to product, use
21 it and dispose of it. What is the
22 environmental and carbon impact or footprint

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 on the processing of that feedstock to my
2 product? And that is the complex part of it.

3 But clearly, I can assure you that there is a
4 value proposition for switching the carbon
5 from bio to petro and I can communicate it and
6 that is my first point. Let's go to the next
7 slide.

8 So, I only asked a simple question.

9 This is where I am coming up with this carbon
10 footprinting workable model is saying I have
11 100 kilograms of polyethylene and when I burn
12 it or eventually it goes into the atmosphere,
13 remember that global warming potential
14 psychometrics measure is a hundred year cycle.

15 It is not five years, ten years. It is a
16 hundred years cycle. Ask well how much CO₂
17 does that release to the environment? And if
18 I replace the carbon, the origins of the
19 carbon from petro to bio, what is the carbon
20 footprint reduction if any do I get?

21 And PET, is it the structure on the
22 right-hand side is your pop bottle and these

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 examples I give you are not just picked out of
2 it. As you know, Dow Chemical announced that
3 they are going to make polyethylene from
4 sugarcane. Coca Cola announced that they are
5 going to switch their PET bottle to plant
6 bottle, which contains a biocarbon content.
7 You have biobased plastic products like
8 polylactic acid, polyhydroxyalkanoates, PHAs,
9 vegetable oil based polys, a whole series of
10 products based on simply switching the carbon
11 from a petro to a bio. Next slide please.

12 And I submit to you a very simple
13 metric analysis which shows you the value
14 proposition. And that is to say that if I
15 take a petro polyethylene, if I had used 100
16 kilograms of resin, that carbon, when it goes
17 out at CO₂, will give me 320 kgs of CO₂
18 released to the atmosphere, period.

19 That CO₂ released to the atmosphere
20 will take millions of years to be fixed. So
21 that is my net debt into the environment, my
22 impact on the environment.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 If I use a biopolyethelene, I use a
2 PLA substitute, I use some other substitute,
3 that CO₂ release is fixed by the next crop I
4 plant, the next biomass plantation I plant,
5 that is a zero carbon footprint.

6 So from a material carbon
7 perspective, if I sit back and say I have a
8 choice, then what I am submitting is that
9 replacing petro with a biocarbon offers you
10 the value proposition of a CO₂ carbon
11 footprint reduction. If you take PET, it is
12 about 214 kgs of CO₂ per 100 kg of resin. And
13 if you convert say a PET bottle, you use a PLA
14 bottle, that carbon, material carbon
15 footprint, it will give you a zero carbon
16 footprint. That is the fundamental value
17 proposition. Next slide.

18 Let's take PET. This goes back to
19 biobased content. Sorry for the chemistry
20 here but all I want you to focus on is in the
21 carbons of the PET molecule. There are ten
22 carbons. The question is, do I have to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 replace all of the ten carbons to get a value
2 proposition? What if only two of the ten
3 carbons is replaced with a biocarbon? So in
4 other words, 20 percent biocarbon content. Is
5 there a value proposition or not?

6 And let's use a simple what you
7 studied in freshman chemistry psychometrics
8 which we had just talked about and ask the
9 question what does 20 percent carbon,
10 biocarbon content provide you? Should you
11 even get into it? If not, then it is a
12 useless exercise. Next slide.

13 So, on this slide, you can see that
14 PET, which has got a certain petro carbon, all
15 of it is petrocarbon, gives you 214 kgs of CO₂
16 released per 100 kg of resin.

17 If I take only 20 percent, that
18 means two of the carbons with bio, in others
19 the glycol component is there, then I get a 20
20 percent CO₂ reduction, just from the material
21 carbon perspective. Assume everything else is
22 the same at this state. Is this 20 percent

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 significant or not? Let's go to the next
2 slide.

3 So if you look at this slide, there
4 are two messages in this slide. Number one,
5 the amount of CO₂, if you take the total PET
6 in usage today in the world, it is about 37.5
7 million metric tons. So if it replaces 20
8 percent of that carbon with biocarbon, that
9 translates to 17 million metric tons CO₂
10 reduction. This is verifiable transfer. This
11 is material carbon footprint. I am not
12 talking about the process yet at all. We can
13 argue about that later. We can debate it
14 until we are blue in the face but this nobody
15 can challenge.

16 So if I can provide the biocarbon
17 content, which is what the BioPreferred
18 labeling is, and show you that the volume of
19 material or product I am selling is so much,
20 then I can calculate the CO₂ reductions
21 achieved in that. Right?

22 Now the EPA has got this very neat

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 calculator. If I gave you my calculator, you
2 will say it is all biased. So we should use
3 the EPA calculator here. So you can take the
4 CO₂ emissions reduction and translate it into
5 values which are easily assimilated by the
6 stakeholders, by the lay public out there.
7 And I will just pick one.

8 So that 17 million metric ton CO₂
9 reduction by replacing just 20 percent or two
10 carbons out of the total ten will save you 40
11 million barrels of oil each year. So
12 significant? Maybe, maybe not. But certainly
13 it is a trend in the right direction and that
14 is what I guess Professor Anex alluded to when
15 he said we need to pick specific matrixes and
16 then see if we can focus and target it. Next
17 slide please.

18 So biocarbon content determination,
19 of course you have seen that. Let's go to the
20 next slide.

21 Now the key to all of this comes
22 from how do you measure this biocarbon. If I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 give you a polyethylene film and I said that
2 came from bio, how do you find that out?
3 Right? And so the essential success or value
4 comes from having a standard that can
5 absolutely quantifiably verify what is the
6 biocarbon content of a product. And this is
7 the basis, the principle for that. And it was
8 very fortunate that it works that way.

9 So carbon is an equilibrium with
10 radioactive carbon, CO₂. When that plants fix
11 it, then you will have every or any biobased
12 product will have a radioactive carbon
13 signature associated with it, which comes from
14 a crop or any biomass feedstock. A fossil
15 carbon feedstock will have no radioactive
16 carbon signature associated with it because
17 the half life of radioactive carbon is 5,760
18 years. I call that new carbon versus old
19 carbon. And you can pat yourself on the back
20 because we are all new carbon materials, so
21 far.

22 So using C-14, we can quantify the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 biobased content and from there calculate what
2 is our CO₂ reductions and communicate that in
3 a very efficient manner, which is what I
4 believe the biobased content will tell you.
5 Next slide.

6 And so there is the ASTM Standard
7 D6866. I won't go into this. You can read
8 this later. If you have any questions, we can
9 talk about that later. Next slide.

10 So let's talk about the process
11 carbon footprint and LCA -- no you are going
12 too fast.

13 So as I just talked about and we
14 are hopefully in agreement that the intrinsic
15 material carbon footprint for switching from
16 petro to bio can be established, calculated,
17 and communicated using ASTM 6866. It is
18 verifiable, it is transferring and it does
19 give you an environmental value proposition.

20 Two, the carbon footprint for the
21 conversion of that feedstock to product, that
22 is where all this LCA analysis comes into play

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 and Marvin already alluded to that, which says
2 that you can use ASTM 7075. I use the 1440.
3 There are lots of methods and ways in which
4 you can do the process footprint carbon, as
5 well as environmental footprint. It is an
6 integral part.

7 Two more points here. And this is
8 what is problematic in the total LCA issues.
9 One is end-of-life scenarios. The end-of-life
10 scenarios in a disposable system can give you
11 skewed and misused data. The NatureWorks
12 folks will testify to that.

13 If you took a landfill and you put
14 a PLA into that landfill, landfills are
15 typically considered anaerobic and therefore
16 any biodegradable product will give out
17 methane. So of course you say since today I
18 put in PLA in a landfill, therefore it is
19 going to give out so much methane and methane
20 is 23 times worse than CO₂ and I can make PLA
21 look terrible. Right? A very simple way to
22 do it.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 So but the question is, does PLA
2 actually break down in a landfill, given the
3 way the landfill is today? And two, was PLA
4 even meant to go into a landfill? This is
5 where the issues come up and therefore, a
6 blind simple, I am going to do an LCA and it
7 is going to give me all of the answers does
8 not work, as Robert so very nicely pointed in
9 the earlier slide.

10 Transport is an important component
11 in LCA, as anybody who has done anything with
12 LCA will know. So shipping it from Blair,
13 Nebraska to California or shipping it all the
14 way from Europe to here, I can ship things
15 anywhere I want, use the worst possible
16 transportation thing I want and make anything
17 look good or bad. So somebody has to really
18 validate it and verify it.

19 So my message is not that LCA, LCA
20 is an important tool. It does allow you to
21 improve environmental performance but it has
22 got issues which must be addressed before you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 can implement it and make it adoptable.

2 The last one in there, I forget,
3 let's go further. So I want to summarize
4 this. Here is some basic schematics. So if I
5 take oil, I got to polyethylene. I can go to
6 ethylene oxide, ethylene glycol, polyesters.
7 This a fundamental, the product chain, if you
8 want to do that.

9 Now the LCA comparisons which we
10 typically do, we go to a database like a
11 SimaPro. They got all the numbers, you plug
12 them in. But I don't know where those numbers
13 actually came from, how verified it is, who is
14 verifying it. And if you take new
15 technologies like taking corn to ethanol or
16 vegetable oils to ethanol to ethylene and all
17 these products, what is the process impacts
18 and what are the implications of it? That is
19 what the process carbon footprint.

20 I am saying we need to separate the
21 two because the valid proposition for
22 biobased, to me at least, is very clear. It

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 has got a clear carbon footprint direction.
2 Next slide.

3 So here is where the LCA trap comes
4 into play and where you see all these debates
5 because we have been sort of talking in
6 generalities. I am going to give you
7 specifics here.

8 So on the left-hand side, you have
9 PLA or a bioproduct and this is a specific
10 example for polylactic acid product. Right?
11 This is from the Cargill NatureWorks database.

12 So in order to convert growing of corn all
13 the way to making PLA, it is about 320
14 kilograms of CO₂ per hundred kilograms of
15 resin.

16 If you are a polyethylene producer,
17 you take the extreme right-hand side, the
18 light shaded portion of it, that is about 150
19 kgs of CO₂ per hundred kilograms of resin.

20 So the dark shaded one is the
21 intrinsic carbon which is released as CO₂.
22 That is the 320 kgs of CO₂ per 100 kgs of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 resin, which we saw earlier.

2 If I say I am going to recycle it
3 two times, I don't show you the dark blue. I
4 just show you the light shaded earlier. Hey,
5 PP is much better than PLA today because look,
6 you have got 320, I got only 160. Of course
7 you can also take the other argument and don't
8 show this process conversion. Hey, I am zero,
9 and go the other way.

10 So what I am saying is that one has
11 to be very careful in how you inter-put and
12 use these data because you can make anything
13 look good or bad the way you present it. And
14 these are being done where the intrinsic
15 carbon of the product going into CO₂ sometimes
16 is not taken into consideration and you have
17 seen LCAs. There is a huge data inventory
18 base and how do you calculate it. And how do
19 you validate it and how do you verify it? For
20 a small producer or a manufacturer, that
21 becomes a task. Okay, next slide.

22 And I want to take this further.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And again, I have taken this slide right out
2 of the NatureWorks slide Erwin Vink has
3 published this in much detail. What I want to
4 point out here is the following.

5 If you take the extreme left-hand
6 side part of the graphic, it shows you about
7 2.02 kgs of CO₂ per kg, it is now on a per kg
8 resin basis. It is lightly shaded. What it
9 is basically telling you is that is the
10 process carbon footprint they have. Right?
11 This is the process carbon footprint you have.

12 If I substitute the fossil carbon
13 use with the biocarbon of the renewable
14 energy, I can drop it dramatically. Right?
15 But there is a time needed for the change to
16 happen and what happened. So you don't want
17 to throw the baby with the bath water out. If
18 a technology is coming forward and it is
19 using fossil energy today, the potential for
20 it to move into a renewable energy plus a
21 renewable product base is there. And what it
22 is, this is an older data. I think there is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 some newer data which is available which
2 basically says that if the energy used to make
3 a biobased product is also comprised of a
4 renewable component, then your carbon
5 footprint will be closer to the zero or near
6 zero. All right?

7 Okay, one last comment on this and
8 then I think my time is getting short here.
9 That is why I think Ron put me at the end,
10 probably. One last point on this can go back
11 to that one slide please.

12 All right. One last point I do
13 want to make on this. Because there is the
14 comment always made well what if I keep
15 recycling the petroleum based product and I am
16 not releasing CO₂ at all. So I had 320 kgs of
17 CO₂ released, PLA or a biopolyethylene or a
18 biobased product was at zero or near zero.
19 But if I am not releasing this, isn't this
20 advantageous? I am okay. Well, if you looked
21 as recycling continuously and you bring this
22 down, to make the product you still are

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 picking CO₂ because you are growing a corn or
2 a biomass, so you will go negative on that
3 axis. So it doesn't matter if you are reusing
4 it or not, you will still get that valid
5 proposition. And then the last slide.

6 So if I want to summarize this, the
7 red is what you want to look at. That is that
8 the material carbon footprint reductions value
9 proposition of bio providing for a reduced
10 carbon footprint is easily translatable, does
11 give you a valid proposition and you can do
12 this using biocarbon content analysis. End-
13 of-life along with this is another good
14 metrics. And as Robert pointed out in the
15 last slide, these two give you the value
16 propositions which can be quantified and
17 easily captured. It is not to say that LCA is
18 important. It is a useful tool to compute and
19 report but it does provide continual
20 improvement but it is not the top of the list,
21 it is an add-on value as you continually
22 improve the environmental performance of that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And you need to be careful of the skewed and
2 misused LCAs, depending on data quality or
3 other issues associated with that.

4 Thank you very much.

5 (Applause.)

6 CHAIR BUCKHALT: Stay up there Dr.
7 Narayan. And if we could ask Robert, if you
8 and Stephan could join us up at the table
9 there, we will have a panel discussion also in
10 just a second.

11 So let's take a question that came
12 in. Why does a 20 percent fossil reduction
13 lead to a 30 percent reduction in CO₂? Zora
14 Niederman, University of Arkansas. Did you
15 say that?

16 DR. NARAYAN: What was that again?

17 CHAIR BUCKHALT: Why does a 20
18 percent fossil reduction lead to a 30 percent
19 reduction in CO₂? I didn't hear that but that
20 was the question.

21 DR. NARAYAN: I didn't quite catch
22 that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 CHAIR BUCKHALT: Well I think maybe
2 you misspoke. A 20 percent fossil reduction
3 lead to a 30 percent reduction in CO₂.

4 DR. NARAYAN: Oh, maybe what he
5 said was if you switch in the PET, a 20
6 percent biocarbon content is translatable to a
7 20 percent CO₂ reduction. That is what we
8 said. And we translated to actual numbers so
9 I am not sure.

10 CHAIR BUCKHALT: Okay. Here is
11 another question. This is from Bobbie Lipiatt
12 again. How does the ASTM for biocarbon
13 content analysis accomplish a consequential
14 carbon footprint analysis recommended by Dr.
15 Anex? That is, how does the standard account
16 for changes in demand for other products?

17 DR. NARAYAN: I hope what I read
18 Robert made the comment was that you want to
19 focus on carbon footprint, okay, let me answer
20 it in an easier way. The ASTM standard allows
21 you to quantify the biocarbon content of a
22 product. Knowing the biocarbon content one

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 can, just on a material carbon basis, say how
2 much CO₂ reductions have been achieved. That
3 is all it does. It doesn't purport to make
4 this look good, bad, cheaper, better, better
5 performing, nothing. That is all it does and
6 that is the basis for that.

7 CHAIR BUCKHALT: Questions here?
8 We will take some more questions. And I am
9 suspecting we will continue to get some more
10 questions coming in from the phone lines and
11 from the folks on the web. If those mikes
12 aren't hot enough, I will turn them up in a
13 second.

14 And either one or all of the panel
15 members can take this if you want to. Does
16 limiting the impacts that are considered also
17 mean that you will end up neglecting potential
18 important negative or positive impacts? I
19 think this has to go with some stuff that you
20 said, Dr. Anex. Doesn't limiting the impacts,
21 that is how many things you are going to
22 consider when you are looking at an LCA or an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 environmental impact, mean you will end up
2 neglecting potential important negative or
3 positive impacts? Anyone want to take that?
4 If you take down from the 16 or 20 items you
5 are looking at down to three or four.

6 DR. ANEX: Yes. I mean, the
7 problem is that in an LCA as we currently do
8 it, we -- well, if we go back just a little
9 while, we have been adding in more and more
10 impact categories, as we say well this is
11 important and this is important and now we can
12 handle this. But I would say there is a
13 virtually limitless number that we still
14 aren't dealing with.

15 And at some point, having a whole
16 lot of information like that, I think is just
17 information overload. Having massive numbers
18 of impact categories about which we don't know
19 how to use them in decision-making is not very
20 useful.

21 So yes, it is absolutely true and
22 as my students always remind me whenever I am

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 talking about the various assessments we do,
2 there are lots of categories that we are
3 leaving out now. And if we want to include
4 everyone's view of what sustainability is, I
5 think there is a limitless number of those.
6 And so that is hopeless.

7 So I am arguing for finding out
8 which ones are the most important to us and
9 work on them.

10 CHAIR BUCKHALT: Dr. Narayan, I am
11 sure you want to comment.

12 DR. NARAYAN: Well he said pick the
13 most important ones and I guess I already
14 picked it. Right?

15 The first one of course is the
16 carbon footprint which is directly related to
17 the BioPreferred Program and biobased product
18 and the end-of-life and what happens to
19 product after use. Which is also the first,
20 when EPA and all starting talking about waste
21 and waste management, that was the most
22 important category.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 But I am sure neither Robert, I am
2 speaking, putting words in his mouth, saying
3 that LCA is not a good tool, is not a useful
4 tool, it is. It should be used. You should
5 look at other categories and maybe there is a
6 minimal value which should be made to qualify.

7 But the two most important impact categories
8 are the carbon footprint reductions because
9 that is what bio offers as a valid proposition
10 and B is the end-of-life.

11 CHAIR BUCKHALT: Okay.

12 DR. ANEX: I guess I will add that
13 I was trying to differentiate very carefully
14 between what an individual uses, the
15 information an individual uses in making a
16 choice. So if you present me with a big menu
17 of impact categories, I can choose which ones
18 are more important or I can do some sort of
19 futuristic balancing of those.

20 But I think from a policy
21 standpoint, that no longer is viable. I mean,
22 that was sort of my reference to Arrow's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 impossibility theorem. There is no social
2 welfare function that allows us to weigh all
3 those things off for society. I think that
4 plus the idea you need clear signals.

5 We are trying to produce policy
6 here to achieve definite ends. And I think if
7 we identify what those ends are and implement
8 policy to achieve them, that is good. But
9 those goods should be fairly narrowly defined
10 and transparent, so that you actually get a
11 clear and powerful incentive for those
12 producers or consumers who are receiving that
13 information. If you say well here is this
14 list of 45 indicators and here is the
15 weighting factors and then that is what we are
16 trying to optimize, I don't think that will
17 drive us towards a very desirable endpoint.

18 CHAIR BUCKHALT: Here is a question
19 from DuPont, Carol Casarino, for Dr. Anex.
20 Don't you need to have a significant increase
21 in feedstock demand to have any significant
22 consequential impacts? Probably true biofuels

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 but biobased products represent such a small
2 fraction of the demand for agricultural
3 products at this point. Are there really
4 indirect consequences?

5 DR. ANEX: Well and I think that
6 that very much varies with what the product is
7 we are talking about and its characteristics.

8 So if we are just talking about
9 demand for an agricultural commodity and that
10 impact through the economic markets, for a lot
11 of them, that is probably true. But these
12 products also have different characteristics
13 than the products that are currently on the
14 market. And so when they enter the market,
15 there will be a whole bunch of consumer
16 responses that mean there are substitutions
17 made, there is other economic activity that
18 isn't just demand for the soybeans or the
19 corn. And I think we need to take those into
20 account.

21 And it is also true that what we
22 had hoped for is a significant change. We

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 actually hope to have significant amounts of
2 petroleum based products replaced. And I mean
3 I think it at least needs to be considered.

4 CHAIR BUCKHALT: This I am probably
5 going to direct at a member of the audience
6 out there but Jim Darr, EPA. Will the LCA of
7 a product assist in getting into the EPP
8 program?

9 MR. DARR: I am Jim Darr at EPA and
10 I do work in the Environmentally Preferable
11 Purchasing Program at EPA, which we usually
12 call EPP since the whole thing is kind of a
13 mouthful.

14 Well, our guidelines or use of LCA
15 is consistent with our EPP guidelines which we
16 recommend people make those choices on the
17 basis of looking at multiple environmental
18 impacts across the whole product lifecycle.
19 We don't say specifically you have to do a
20 formal LCA but you should bring that
21 perspective to your thinking.

22 But I probably should use this

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 opportunity to try to sort of correct a
2 misperception a lot of people have about our
3 program. You know, we don't have a list of
4 approved products or anything like that. We
5 don't have a registration or certification
6 program like you would in Energy Star or
7 WaterSense. I mean basically we have focused
8 on providing information and tools to
9 purchasers. You know, primarily other federal
10 agencies but that information is out there for
11 other people to use as well. So we don't
12 really approve specific products. I mean, we
13 do have an EPP database, which I think is one
14 of the things that leads to confusion where we
15 have a lot of standards and specifications in
16 there. But basically we make decisions on
17 what standards and specifications to include.

18 We don't make decisions about specific name
19 brand products or specific companies. You
20 know and a lot of those standards and links in
21 our database have links to organizations that
22 may do certifications against those standards

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 and that is for the convenience of the users
2 of the database but we don't sort of approve
3 those products ourselves in our own program.

4 So I'm not sure if that answers the
5 question. But you know, I think in terms of
6 somebody making an EPP claim and sort of not
7 getting crosswise with the federal trade
8 commission and that sort of thing, I think if
9 they have done a credible LCA to say well, you
10 know, this is our documentation, our support
11 for saying why we think this is an
12 environmentally preferable product, I think
13 they are on a lot firmer ground for making
14 those kind of claims on their own if they have
15 done an analysis like that to support it.

16 CHAIR BUCKHALT: Thank you, Jim. I
17 appreciate that. Jackie? Jackie Ottman.

18 MS. OTTMAN: I was fascinated with
19 Dr. Narayan's comments. I have two questions,
20 please.

21 One is how practical is the science
22 of evaluating carbon as you discussed it? You

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 know, what does this cost? Can you compare
2 similar products, products across categories?
3 Is anyone doing this successively and cost
4 effectively right now?

5 DR. NARAYAN: The material carbon
6 footprint is just a direct psychometric
7 extrapolation of the data of what is the
8 biocarbon content, which is based on ASTM
9 6866. That is there are a number of labs
10 which do it. The cost, it used to be \$300.
11 The demand went up so the price is now,
12 somewhere, I don't know, \$600. It is not
13 exorbitant is what I would say. So it is
14 being done today.

15 There are many products
16 manufacturers who actually put up the
17 biocarbon content using the ASTM standard,
18 which is part of what the labeling is asking
19 for and they can put a substitute thing which
20 says that if I replace the material carbon,
21 this is the potential CO₂ reductions. And
22 then following it up with a process carbon

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 environmental profile using LCA with all its
2 complexities involved in it.

3 MS. OTTMAN: Thank you. And my
4 second question relates to your concept of
5 value proposition. Now you defined the value
6 proposition as the carbon content and the end-
7 of-life. But I may want to question you on
8 that in terms of the word value and value to
9 who. Are those things of value to the
10 consumer? And that is how I usually
11 understand the term value proposition.

12 It would seem to me that the value
13 proposition would hold from a consumer
14 standpoint if there was a carbon tax put on
15 products or some kind of pay as you throw
16 waste fees. But otherwise, I don't understand
17 what the value is to the consumer of those two
18 things.

19 So also into the equation you may
20 want to consider what the consumer considers
21 the value of biobased, which in many respects
22 is natural and that translates to non-toxic.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 What do you think?

2 DR. NARAYAN: I am almost afraid to
3 go into this natural thing because I don't
4 have a scientific basis to call what is
5 natural what is unnatural. So fossil like I
6 said to you is also natural. That is why they
7 call it natural gas. And coal is natural. It
8 is in the ground.

9 So the point you make is well
10 taken. I would suspect that the value
11 proposition is going to be more in terms of
12 environmental value proposition. So if I buy
13 a biobased product which has substituted let's
14 take polyethylene as a simple example, 100 kgs
15 I can say a billion bags. I am now
16 substituting with a biopolyethylene or a bio
17 PLA or a bio whatever product is there. Then,
18 I may not be sure my process carbon and LCA,
19 and am I impacting water, am I impacting what
20 it is? All those complicated things. But I
21 can be sure that I have reduced my carbon
22 footprint just based on a very simple

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 biological carbon cycle. This is what we
2 study in high school. Right? So that I can
3 be comfortable and take home is this message
4 which we can communicate and which we can
5 validate. That is what we do.

6 Clearly, there is a role for LCA in
7 all of this because you don't want to be in a
8 position where you have a biobased product and
9 then you have a red flag where you are
10 consuming a thousand times more energy or you
11 are spewing out some emissions which is not
12 desirable.

13 But in principle, most of these
14 processes and most of these are already well
15 vetted out, the intermediates and all that
16 there is no major red flags on it. So the
17 environmental and process carbon footprint and
18 the total environmental footprint is more or
19 less going to be closed.

20 So the value proposition then to me
21 is that by replacing the petro carbon with the
22 biocarbon, I get this advantage of CO₂

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 reductions. And of course the end-of-life
2 plays into that as well.

3 MS. OTTMAN: Sure. Thank you.

4 CHAIR BUCKHALT: Another question
5 from the audience?

6 MR. HELLING: Yes, my name is Rich
7 Helling. I am from Dow Chemical.

8 First of all I want to just make
9 the comment that a very appealing thing about
10 the current BioPreferred metric, which is the
11 carbon content analysis is that it is simple
12 and as Professor Narayan has been explaining,
13 it does drive us toward the long-term balance
14 between carbon coming out of the atmosphere
15 through plants and then going back, too, on
16 the atmosphere as things are used and
17 disposed.

18 And I think it is also very
19 important to keep the concept that we
20 shouldn't let quest for perfection get in the
21 way of doing the good. And we can get to good
22 with a lot simpler set of metrics than a full

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 LCA can provide you with.

2 I think it is a pretty reasonable
3 and logical next step to look at a broader
4 carbon footprint that includes the process LCA
5 characteristics. I think the ability to do
6 the process LCA for carbon is advanced and
7 quite well. And particularly to include the
8 other greenhouse gases, the N₂O and things
9 that are very, very important in ag systems in
10 particular.

11 So with all of that as kind of a
12 long rambling preamble, the question though
13 is, I think, one or two of you mentioned the
14 PAS 2050 standards that one example of a
15 carbon footprint template is getting some
16 traction out in the world. And so do you have
17 comments or opinions on is that going to be
18 the gold standard? Is it a reasonable working
19 definition for carbon footprint and does it
20 include all the things it needs to? And so
21 what is your comments on that as a carbon
22 footprint standard versus other things?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. ANEX: I would say it is the
2 first in many ways. I mean, there are some
3 other versions that have sort of been out
4 there. But as a clear set of fairly complete
5 guidelines, I think it is the first. ISO has
6 a little bit broader reach and so when ISO
7 comes along reasonably soon, it is hard to say
8 how the political process may play out. I
9 think 2050 is there on the ground soon enough
10 and has been adopted by enough people that I
11 think probably it will have some legs. And I
12 don't think the ISO standards are likely to be
13 too terribly different and they may in fact
14 come to be, although the ISO standards are
15 likely to be a little bit more lax, a little
16 bit more freedom to the people using it. But
17 they may sort of come to merge.

18 So it is very hard to say. But I
19 do think that they are reasonably complete and
20 have been prepared by good people. So, I
21 think that is a good starting point and it is
22 really what is available today.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. NARAYAN: You know, at ASTM,
2 Carl Muska is supposed to chair this, but we
3 have this ASTM 6866 which actually measures
4 biobased content. So we have a work item
5 which we are still getting together to do a
6 manner in which we can do both material carbon
7 and process carbon footprint using the LCA
8 methodology. Not calling it the LCA but from
9 cradle to business gate or factory gate and
10 put out the ways in which that can be done,
11 picking, select the carbon, now all the global
12 warming potential impact gases and emissions
13 to it.

14 So that is a standard we are
15 writing as an adjunct to the 6866 standard.
16 So maybe you should participate in that.

17 CHAIR BUCKHALT: Kate?

18 MS. LEWIS: This question is mainly
19 for Steven. Steven, since you gave us an
20 overview at the beginning of this meeting of
21 the activities of the various nongovernmental
22 organizations, the eco certification and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 ecolabelling organizations, ever since that
2 overview, we have kind of focused in on
3 carbon, this carbon metric or carbon
4 footprint. We also talked about PAS 2050.
5 Can you give us, if any, is there an update or
6 a summary on this impact or this issue
7 specifically in the sustainability
8 consortiums, the Packard Foundations or the
9 Keystone Groups Green Products Roundtable?
10 Can you give us a summary or a sense of the
11 extent to which carbon footprint or carbon has
12 emerged as a part of their dialogue and
13 action?

14 MR. SYLVAN: I haven't been to all
15 of the sustainability consortium meetings. I
16 have been to some of them, and Packard
17 Foundation, I think I have been to all of them
18 so far, and Keystone many of them. I could
19 say that carbon is the dominant environmental
20 issue discussed in all three of them but it is
21 not the only one.

22 I think sustainability consortium I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 believe there may be folks here who are part
2 of the sustainability consortium, particularly
3 in one of the three pilot areas, personal care
4 products, food ag or electronics who could
5 speak to this more directly but I believe that
6 trying to build this sort of Wikipedia, if you
7 will, of life cycle product sustainability
8 data, carbon is going to be the first and
9 primary environmental attribute they are going
10 to focus on, along with the others. But that
11 would be sort of the first one to focus on.
12 Somebody here might be able to correct me on
13 that.

14 So it is primary but it is not the
15 only one.

16 CHAIR BUCKHALT: Steve, I am going
17 to ask you to take the answer to this next
18 question after this currentquestion is asked
19 here. The answer to this next one -- or do
20 you want to go ahead? So go ahead and ask
21 your question and I will have Steve answer
22 this additional question I have in my hand.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MR. ARBUCKLE: This is a question -
2 - My name is Peter Arbuckle. I am with USDA
3 NIFA. And this is a question for both Dr.
4 Narayan and Mr. Buckhalt. In kind of a
5 dovetail on the value proposition question
6 raised earlier is that how does the value
7 proposition that you described compare to the
8 value proposition of BioPreferred Program? I
9 feel like in the value proposition that you
10 raised carbon and end-of-life were the major
11 issues but were these the major interests of
12 the BioPreferred Program as well or the major
13 say indicators of sustainability? Or is that
14 the major thing that you are interested in
15 measuring?

16 CHAIR BUCKHALT: At this point, we
17 are measuring biobased content That is what we
18 must measure to be able to designate. And we
19 will have Steve provide a technical answer in
20 a second.

21 But this program was set up by the
22 Agriculture Committee not by the Environmental

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Committee, if you will. This program was set
2 up to create new markets for industrial
3 materials made from agricultural products, and
4 byproducts. I mean, that is what it was
5 created for and it has indeed done some good
6 things. You saw economic development being
7 one of the drivers for the program. The fact
8 is, it has evolved over the years and we have
9 realized that the environmental impacts are
10 quite substantial.

11 The other thing is that behind this
12 was the recycle program the EPA has in place
13 in terms of how products are designated for
14 federal purchase. Had it been not molded on
15 that particular model, if you will, it might
16 have turned out differently but indeed, it
17 wasn't. And we took the legislation we have
18 and developed the program.

19 That may not be the answer you want
20 to hear but I am just trying to let you know
21 the parameter of how we got to where we are.

22 MR. ARBUCKLE: No, it is. But I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 think it is also important to kind of merge
2 those value propositions. When I listen to
3 Dr. Narayan, I was wondering why the economic
4 stimulation or rural economic development or
5 community development was left out of the
6 value proposition because that is a big part
7 of it. And when you add that piece, at least
8 from a rural community point of view, then the
9 LCA data becomes much more important. Like
10 water quality, air quality. And from a rural
11 development part, I would be less concerned
12 with carbon emissions than I am with clean
13 air, clean water, et cetera. And I guess that
14 is just a comment more than a question.

15 CHAIR BUCKHALT: Anybody want to
16 say anything?

17 DR. NARAYAN: Well, I think you
18 just brought up one more category, which is
19 what Robert alluded to. And I don't think
20 there is a difference between the value
21 proposition that I brought up which is that
22 there is a clear, and I will put the value

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 proposition in quotes of a carbon value
2 proposition and an end-of-life value
3 proposition that can be articulated, that can
4 be quantified, that can be validated for
5 biobased products, which can easily be
6 accepted and translated.

7 Jobs and other things are more, you
8 know, it is not a quantifiable measure which
9 we can plug into the equations but that is why
10 it is only a component of it. Where the
11 biobased products gets a lot of heat, maybe
12 not in this audience is the fact that, well it
13 is not environmentally responsible. Or if you
14 take an LCA and focus on only the process part
15 of it and you take emerging technology of
16 making a bioproduct and then you just compare
17 whatever boundary, between whatever boundary
18 conditions you want, or pick whatever impact
19 categories you want, which makes it look
20 better, then that is where the problem arises.

21 So rather than being defined by
22 somebody else as to what you are, what you are

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 not, this allows you to define what is a
2 biobased product, what is its value
3 proposition and how do you calculate,
4 quantify, and communicate it. That is what
5 that is about.

6 DR. ANEX: I would like to clarify
7 that in my set of sides, I mean, I like the
8 goals of the BioPreferred Program that include
9 rural development. And I think if you are
10 doing consequential type analysis, that is
11 economic by its very nature. And so when you
12 are looking at marginal changes, you know,
13 reducing ethylene production in the Olefins
14 Plant in Houston may not have any effect on
15 jobs or very, very minimal, whereas putting
16 that plant in Blair, Nebraska may have very
17 significant impacts and I think those should
18 be accounted for. And you know, it wouldn't
19 be in sort of an attributional LCA or even a
20 similarly average analysis. Economists don't
21 do that kind of thing. They know it is silly.
22 The average employment across the whole

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 nation and so one more dollar's worth of
2 economic activity will create .00003 jobs. I
3 mean, we are much more interested in
4 specifically where those jobs occur. And in
5 some places they are more relevant to the
6 goals of the program than others.

7 CHAIR BUCKHALT: Follow-up.

8 MR. ARBUCKLE: So what are we
9 recommending for the BioPreferred Program?
10 Are we recommending just the CO₂ footprint
11 model or are we going to -- I mean you said
12 before to start with the CO₂ footprint and
13 then support it with LCA data and perhaps
14 these consequential LCAs which are
15 extraordinarily complex.

16 DR. ANEX: Well, I don't know what
17 we are recommending but what I am recommending
18 is that there are -- I recommend a fairly
19 simple set of metrics. I think one, you know,
20 and I can't necessarily do this on the fly but
21 I think we could sit down with some of the
22 folks at the Center for Agricultural Role

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 development card, you know, the economists,
2 and say well what is the right measure.

3 But I think the same sort of an
4 economic consequential model that you would
5 use for a consequential carbon footprint, I
6 mean it is an LCA but it is only looking at a
7 couple of impacts. It is the very same model
8 that you would use to say what is the economic
9 impact in terms of jobs, whatever metric of
10 rural development you want to use.

11 So I was arguing for several
12 metrics that should be incorporated and I am
13 not an economist so I won't go too far down
14 that road but some of my colleagues could
15 probably speak to that.

16 MR. ARBUCKLE: Thank you.

17 MR. DAVIES: Hi. Steve Davies
18 NatureWorks. I don't want to be provocative
19 but maybe ask what seems like a dense question
20 but it seems like we have moved in this
21 discussion from what was fundamentally
22 discussing a content label, biobased content

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 into just a slippery slope of an ecolabel and
2 then all the benefits around that.

3 I just want to throw back to the
4 panel and to you, Ron, a sanity check. Is
5 that what we want to happen? This was
6 intended as a content label, biobased content,
7 for all the bullets you list on your banners
8 there, energy security, energy independence,
9 geopolitical stability. None of that will
10 ever be captured in an LCA.

11 So your comments from the panel on
12 that, is this even necessary? I mean, I think
13 the last two speakers especially brought up
14 back very simply in a nice way to why the
15 biobased program and its biobased content made
16 sense. Do we need to keep going further into
17 LCA or various other?

18 CHAIR BUCKHALT: Content we can
19 measure.

20 MR. DAVIES: Right.

21 CHAIR BUCKHALT: It is LCA is the
22 issue we have to address at some point because

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 there are different ways of looking at life
2 cycle analysis. And we are supposed to take
3 that into consideration, this is in the
4 Congressional mandate, when we are
5 considering, this is on the federal side,
6 designating products.

7 On the label side, we are still
8 working through that right now but content is
9 the one thing. What percentage of new carbon
10 is there in a product? We can measure that.
11 And it may be one of the few things we can
12 really measure. I don't have a good answer
13 for you. I mean, maybe Jeff has some better,
14 some other thoughts on that. I will ask my
15 boss if he wants to give it a shot there.

16 MR. GOODMAN: This is Jeff Goodman.

17 I mean, as far as your question goes, the
18 statute does define it as a one-attribute
19 label, not an ecolabel. And our proposed
20 regulation does not identify a need for or a
21 requirement or anything associated with life
22 cycle analysis.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 In the public comments that we have
2 gotten on the proposed rule, we have got a
3 number of people on both sides of the issue,
4 some saying even though the statute defines it
5 as a biobased content label, the consuming
6 public has other views and you are forced by
7 what people think when they see this label
8 into thinking about this; whereas, others say
9 no, you should just do what Congress said and
10 put out USDA certified biobased product and
11 let it go at that.

12 Because of that difference of
13 opinion and because we are opening the whole
14 program guidelines for revision on the federal
15 procurement program side of it, we are just
16 asking the question. We don't have an
17 explicit congressional mandate, clearly. And
18 so we are just in an open-ended way asking
19 these questions, not trying to necessarily
20 come up with an answer today.

21 MR. DAVIES: Thank you. Well maybe
22 then just a comment. To suddenly get into the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 performance and ecolabel attributes seems to
2 certainly assume the role of FDC, which has
3 got that well in hand.

4 A question, just one last question
5 for the panel. Are any of you familiar with
6 the European-based Vincotte certification for
7 biobased content just issued? Well received
8 by a huge customer base of ours in Europe. It
9 is strictly content. They never seem to have
10 gotten into this quagmire of performance LCA.

11 And to the extent you are familiar with it, I
12 am interested in the panel or Ron's comments
13 on why they were able to avoid that, how they
14 kept it a content label and why can't we do
15 the same thing here?

16 DR. NARAYAN: Did the Europeans
17 have the benefit of piggybacking on what was
18 done at the USDA BioPreferred Program? It is
19 one of the very rare occasions when it has
20 been the horseback ride. So we lead the way.

21 They have a lead market initiative
22 on biobased products. And around that they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 have made the basic premises that the
2 biocarbon content is important and, therefore,
3 they have charged the European working group
4 to come up with a standard which is basically
5 the de facto ASTM Standard and ways to measure
6 it in complex products, which is if I have an
7 automobile or if I have a computer, how do I
8 calculate the biobased content? How do I
9 report it and provide a certification for
10 that?

11 So AIB Vincotte in Belgium and DIN
12 Certco are putting together certification
13 based on that, which is very similar to the
14 biobased content label, which the USDA has
15 proposed in this. I think that is where they
16 have moved ahead already in terms of
17 certification in that area.

18 So they are using the ASTM Standard
19 as the basis for quantifying and calculating
20 biocontent. But how do you report it for a
21 complex, multiple product, like a bottle where
22 the cap is not biobased, the bottle is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 biobased? Are you going to claim this is a
2 biobased product or how would you represent
3 that? If you have an automobile or a
4 computer, how would you represent that? That,
5 even at ASTM we have not addressed, which is
6 the next step.

7 How do you report on biobased
8 content of complex products, which is a very
9 important consideration?

10 CHAIR BUCKHALT: And that is what
11 the meeting is for in Riverside, California on
12 February 23rd and 24th is going to be about,
13 complex products.

14 MR. SYLVAN: Can I try to address
15 the first question about whether BioPreferred
16 is an ecolabel or a biocontent label? I will
17 sort of provide a comment in the form of a
18 question that might be worth asking. If you
19 were to go out to the household consumers that
20 buy the products in the categories you are
21 talking about or institutional buyers that
22 purchase these kinds of products and ask them

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 the question. And you show them the
2 BioPreferred label and the name and ask them,
3 you know, what does this mean to you and many,
4 some or many came back and said
5 environmentally friendly. Then whether or not
6 USDA calls it an ecolabel or not, an
7 environmental label, there will be
8 expectations quite obviously of it being an
9 ecolabel, which I would suggest USDA would
10 have to respond to.

11 So there is 500 ecolabels out there
12 that are claiming to be ecolabels and some,
13 probably others that may not be thinking of
14 themselves as ecolabels but raising
15 expectations as such.

16 And if so, perhaps, you know, the
17 question should be considered in that way. So
18 that is the way I look at things anyway.

19 DR. ANEX: And I guess really
20 following on that in the very same lines, I
21 know that Europeans have looked at this
22 proliferation of labels and what they mean and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have grown concerned. And there has been some
2 legislation but that is what the OECD formed
3 the working group that Marv Duncan mentioned
4 that he sits on where they say look, there are
5 these meetings that are inferred in this and
6 should we, you know, if the OECD has a couple
7 of levels of decision-making where they can
8 make different strengths of statements that
9 their member countries then have to
10 participate in. But they are trying to figure
11 out exactly how they should regulate, if you
12 will, the assessment of the sustainability of
13 biobased products. I suspect you are aware of
14 that.

15 So, it is not like Europe has said,
16 that is a quagmire, we are just going to
17 regulate biobased content. They are trying to
18 figure out exactly what they are going to do,
19 in exactly the same way I think this meeting
20 is trying to do the same thing.

21 DR. NARAYAN: I think if I could
22 take what Steve's comment on ecolabel versus

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 this BioPreferred label which you talked about
2 is that there is an eco-content or if you want
3 to call it an ecolabel but it is specific to
4 two aspects or two impact categories. And
5 while you can look at it saying it is not
6 broad enough but at least if you were to say
7 on a scientifically valid basis what can I
8 defend, what can I show transparently, then
9 those are two in the biocarbon content which
10 relates to the material carbon CO₂ reductions,
11 which is an environmental impact category and
12 end-of-life, whether it is biodegradable or
13 recycling which is also an important impact
14 category.

15 So I think where Steve is coming to
16 is rather than making it very broad based, can
17 the BioPreferred label, whether it is an
18 ecolabel or not and you are right in saying
19 that it is perceived outside as an ecolabel,
20 that it be very clear in what its message is.

21 MR. SYLVAN: I'm not sure it is but
22 I guess it is.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. NARAYAN: Yes, that is what I
2 think Robert is also saying. If a message is
3 coming out to the stakeholders, they need to
4 know what is it that this means. And it can't
5 mean everything to everybody or that we are
6 working on it. Here is what is verifiable and
7 here is the two areas or three or whatever it
8 is and put it out so others can follow.

9 CHAIR BUCKHALT: And I would take
10 just a moment and say that we are looking at
11 that. Kate is leading the charge and then
12 Jackie is working for us to go out and talk to
13 consumers. Does a label mean to them what
14 they want it to mean and let's see where we go
15 from there.

16 We have kind of gotten at the label
17 side of the LCA but it is all important. It
18 is all part of the same.

19 Jeff?

20 MR. GOODMAN: Just a further
21 comment about the environmental effects and
22 the label. I think you all know that the 2002

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Farm Bill had a provision in it for a
2 voluntary labeling program. And I think you
3 also know that the proposed rule that USDA put
4 out in the *Federal Register* had a date of 2009
5 on it. There was a seven year lapse there.

6 One of the reasons that there was a
7 seven year lapse had to do with a debate that
8 we have just been having over the last 15 or
9 20 minutes about should there be some
10 environmental attributes associated with this
11 label. Should there be requirements for doing
12 environmental assessment prior to getting a
13 label? And there was some very, very strong
14 disagreement within the federal community
15 about that.

16 And earlier on, USDA had some
17 proponents of that approach and it is one of
18 the reasons why we didn't have a labeling rule
19 sooner. We have, for the time being, we have
20 detached that from the label. And
21 notwithstanding the fact that there are
22 perceptions to that effect, the label

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 application process and the way we propose the
2 rule, will just be the one attribute and
3 biobased content will be the only basis for
4 determining whether a label is issued or not.

5 I think we are having this question
6 over a longer term period. As we revise our
7 program guidelines, as we think about maybe
8 the next generation of the label program,
9 these questions will come into play as the
10 whole field of life cycle assessment matures
11 and as these different consortia and so forth
12 maybe come to reach some consensus and maybe
13 some of the 500 leagues maybe get consolidated
14 or maybe not. But I think our plan moving
15 forward in terms of finalizing the label rule
16 is not to try to bring this into it at this
17 point. This is a longer term discussion.

18 CHAIR BUCKHALT: Steve would you
19 come forward now? I know you have been trying
20 to get up there for a minute or two. But I
21 have got a question here I would like for you
22 to address. I know you want to talk about

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 some other things, too.

2 Bob Bucknum, has asked this
3 question. Is there a minimum biobased content
4 based on ASTM D6866 necessary to have an item
5 added to the BioPreferred program? I think we
6 are looking for an explanation of how we
7 designated items and the process. If you
8 could take just a minute and educate some
9 folks on that.

10 MR. DEVLIN: I guess in terms of a
11 minimum content, we do have kind of a bottom
12 three percent de minimis level that we avoid
13 because there is, within the ASTM standard,
14 there is a plus or minus three percent
15 variability in the test method. So anything
16 that is less than three to five percent, we
17 would not consider as a biobased product.
18 Otherwise, the minimum biobased content
19 traditionally has been driven by the
20 performance of the products.

21 So if we have a particular product
22 that the content level is ten percent is the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 maximum amount that can be produced in a
2 performing product, then that is where we
3 would set that minimum content level, based on
4 ASTM D6866 tests done on actually manufactured
5 products.

6 For example, a couple of years ago
7 we did testing on carpet material with a soy
8 based backing product. Well when you looked
9 at the total carpet system, the face, the
10 fabric on the front of it, the backing
11 material, all of that, the content level was
12 relatively low. It was down in the ten
13 percent range. So we set the minimum content
14 level at ten percent.

15 Ramani talked a little bit about
16 the content. Well was that really worth
17 anything? Well, when you look at the amount
18 of carpet in the different government
19 buildings around the Washington, D.C. and
20 around the country, you know, there is a lot
21 of carpet there. So if we replace ten percent
22 of that carpet with a biorenewable material,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that is a significant reduction. Does that
2 kind of get to what you are asking?

3 CHAIR BUCKHALT: Yes, and you might
4 look at some of the higher ones, how we set
5 up and look at the high and the low and the
6 middle, and where we -- we have said as a
7 committee and make a decision on where the
8 industry is, if you want to elaborate on that.

9 MR. DEVLIN: Sure. What we do in
10 terms of the designation process, we sit back
11 and try to identify who is participating in a
12 particular industry. So if we talked about
13 carpets, for instance, we would go out and we
14 would look to see who is manufacturing
15 products in the carpet industry who has
16 products that we would consider biobased and
17 then we ask those manufacturers to provide us
18 with information about their products, in
19 terms of performance standards that they are
20 meeting. We ask them for samples that we test
21 to the D6866 standard to get, in essence, a
22 sampling of contents. And then we sit back

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 and we look at where is the spread. Where is
2 the spread?

3 There may be some manufacturers
4 that are producing at a higher level. There
5 may be some manufacturers producing at a lower
6 level. It may be a continuous spectrum. And
7 if it is a continuous spectrum then we kind of
8 look to see well is there a major break
9 somewhere? Is there a performance break at
10 some place? Is there a difference in terms of
11 the products that we are looking at? So we
12 have got to look, try to set it based on where
13 is the majority of manufacturers performing.
14 But while promoting, you know, increased
15 competition.

16 CHAIR BUCKHALT: Thank you. Yes,
17 sir?

18 MR. BRADFIELD: Yes, my name is
19 John Bradfield and I work for the Composite
20 Panel Association. We are wood products
21 producers. And my question, actually I have a
22 question for Dr. Narayan but something Jeff

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 just said gives me a question for you, since
2 you have got the mike. You work for him.
3 Right?

4 Anyway the question is basically
5 what I am hearing is that biobased content is
6 pretty straight forward. BioPreferred is
7 where all the LCA, be it consequential or
8 attributional or whatever, that is where that
9 comes in. Is that right?

10 CHAIR BUCKHALT: Not exactly.

11 MR. BRADFIELD: Okay. Then answer.

12 CHAIR BUCKHALT: No, BioPreferred
13 is really a name.

14 MR. BRADFIELD: Okay.

15 CHAIR BUCKHALT: It is really a
16 marketing nomer, if you will. It is a way to
17 put a couple different things under it. And
18 one of them is the mandatory procurement
19 program which is, well, it is most of our
20 program right now, but also the label is
21 coming up.

22 So BioPreferred is where we put

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 this. And it beats calling it FB4P or
2 whatever the heck it was called before. I
3 think you have to understand that it pretty
4 straight forward and it is bio.

5 MR. BRADFIELD: Right.

6 CHAIR BUCKHALT: And the preferred
7 side comes from the fact that it is a
8 preferred product to be purchased by the
9 federal government. So this is just an
10 identifier. That is what BioPreferred means.
11 And there are many things underneath that
12 label, if you will, the name of the program.
13 So that is a program name.

14 MR. BRADFIELD: But over time, we
15 are going to try to work this LCI, be it
16 attributional or consequential into making it
17 better. That is the idea. Right?

18 CHAIR BUCKHALT: Well you know, the
19 program would evolve. And I think Jeff
20 addressed that and we are looking at the
21 label. Content is where we are at right now
22 and the label is going to evolve. And

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 certainly there are environmental aspects to
2 this program and we are going to have to
3 address those.

4 We are in the process of redoing
5 our guidelines. We are trying to get input
6 and that is what these meetings are all about
7 is to hear from the public on what do you
8 think we ought to be doing? How do you think
9 we should make changes? What are some of
10 those changes?

11 MR. BRADFIELD: My actual question
12 I came up here for was for Dr. Narayan. You
13 mentioned in your presentation something about
14 cradle to gate analyses. LCI analyses I
15 assume you were talking about. And I
16 happened, we happened to have done one in our
17 old business.

18 And my question for you then, is
19 how can USDA use that in their BioPreferred
20 Programs or in their various analyses. What
21 is your thoughts about how those best can be
22 used? Because you know, having known this

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 much about it now, I saw your slide and I saw
2 all the other things you said. I wanted to
3 kind of take you back and make you interrelate
4 that to something USDA can do with that kind
5 of information.

6 DR. NARAYAN: The cradle to factory
7 gate. That is the one you are talking about.

8 Right? The reason that came about is that if
9 you are a pure practitioner, if you look at
10 LCA, it is always supposed to be cradle to
11 grave or cradle to cradle. That is how you do
12 it. That is how the LCA is done.

13 The problem comes up when you are a
14 product manufacturer of say a widget which has
15 multiple end-of-life strategies. It goes some
16 into landfill. It is recyclable. It is
17 composting. You have all these possibilities.

18 Some are not present today but you are
19 planning to move it in that direction.

20 So the way LCA typically is now
21 done is saying well today everything goes in
22 the land fill so 60 percent in a landfill, 20

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 percent recycling, ten percent. It is all
2 arbitrary numbers you put up and then you come
3 up with this composite LCA. You have no
4 control over where the product goes.

5 So if it is truly environmental
6 improvements and attributes you are looking
7 for, then what you control is all the way from
8 cradle to your business gate. And if you can
9 very clearly and categorically show how your
10 process footprint is, environmental as well as
11 carbon, then whoever is doing the end-of-life
12 or who wants to complete the whole picture can
13 go ahead and do it. Otherwise, there are
14 numbers being put out which make no sense and
15 no meaning and then that perpetuates and then
16 you are constantly trying to reconfigure it.

17 So, if you look at ISO 1440, it
18 allows you to set boundary conditions and be
19 very clear. So if you clearly articulated
20 that this is a cradle to what I think they
21 call factory gate if I mistake not, I call it
22 business gate, then you do all the inputs and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 outputs and the selected impact categories, 8,
2 10, 14, and you double up your environmental
3 profile.

4 That is what ASTM 7075 does in a
5 nutshell. It is actually based on EPA's TRACI
6 Analysis model.

7 MR. BRADFIELD: How do you think
8 that USDA can put that information into use
9 the best?

10 MR. MURRAY: I have a comment on
11 that.

12 CHAIR BUCKHALT: You have a
13 comment? Okay. Identify yourself, please,
14 sir.

15 MR. MURRAY: Hi. I am Chip Murray
16 with American Forest and Paper Association.
17 And I think in response to John's question,
18 one thing that seems clear here this morning
19 is that there is no answer. And there is a
20 lot of confusion. There is no certainty. A
21 lot of assumptions have to be made. There is
22 the different types of LCAs, the different

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 types of analyses that could be done.

2 The program itself draws boundaries
3 between what qualifies. Even if a product has
4 biocontent, it still may not qualify to be
5 considered BioPreferred in your procurement
6 program.

7 So you couple that with the Federal
8 Trade Commission's approach to advertising and
9 claims which is that if the consumers aren't
10 going to understand it as the comment was made
11 if we go to the people who buy the products,
12 institutional buyers, they are going to assume
13 this is an ecolabel. Well, you seem to be
14 trying to justify that perception, rather than
15 taking the FTC approach, which is once you
16 understand what the consumer's perception is,
17 you need to qualify your label.

18 So perhaps if you have considered
19 the approach of making sure the label doesn't
20 convey any impression whatsoever about
21 environmental benefit because there is no way
22 you are going to be able to establish exactly

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 what that benefit is with one label for this
2 vast variety of products.

3 DR. NARAYAN: Can I take that? I
4 think there is a blanket statement made that
5 there is no environmental value proposition
6 for using a biobased product. I think that I
7 guess maybe I didn't communicate it well
8 enough but there is on the EPA value
9 proposition in terms of carbon footprint
10 reductions for switching from a petro to a
11 bio. And therefore, a value proposition for
12 that.

13 The process of converting the
14 feedstock to that product has got to be in
15 line with what exists today or better than
16 that. That is where the questions and issues
17 come up, where the LCA comes up.

18 And to like I say throw the baby
19 with the bath water out, just because we don't
20 have the process carbon footprints of every
21 product laid out, does not undermine or under
22 value the BioPreferred biobased products.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 My personal is I don't want to see
2 that a USDA BioPreferred label is simply a
3 label saying this is BioPreferred. I mean,
4 what is it useful? We don't need a label like
5 that. It must communicate a scientifically
6 validated attribute, whether it is cost, it is
7 performance, it is environmental.

8 And what I am saying is that based
9 on today's know how knowledge base, there is a
10 value proposition that is on the material
11 carbon footprint reduction. There is an end-
12 of-life value and that is what it communicates
13 today based on that biocontent label alone,
14 which is measured by ASTM 6866.

15 MR. MURRAY: The difficulty is that
16 you are picking winners and losers. So you
17 have to be sure that if you are able to do
18 that and scientifically justify it, any
19 product manufactured in the United States that
20 is able to demonstrate that, regardless of
21 what market it served or how long it has been
22 in existence, has to qualify for that label

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 because otherwise you are discriminating among
2 products and pretty much violating every
3 principle of the antitrust laws.

4 Is that part of this factored into
5 this equation?

6 CHAIR BUCKHALT: You are from AF&PA
7 so I am not going to get in an argument with
8 you.

9 MR. MURRAY: I am just asking a
10 question.

11 CHAIR BUCKHALT: I understand.
12 Congress wanted this to work on new products.
13 I mean, that was the concept behind it. Tom
14 Harkin --

15 MR. MURRAY: Then say that on the
16 label. All I am suggesting is -- I am not
17 demanding anything. I am just asking have you
18 considered putting some of these
19 qualifications on the label itself so that
20 people understand what the label represents.

21 CHAIR BUCKHALT: There has been
22 many discussions on the label and the label is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 still a work in progress. You might have a
2 label that looks like a nutrition label or it
3 might be very simple with the content.

4 Now, having said that, there may be
5 a website that has all of the environmental
6 and economic stuff behind it to go to find
7 out. So that is all still in a state of flux.

8 And where we come down in the final analysis,
9 I am not certain. But it certainly looks like
10 it is going to be the content that is going to
11 be on there, at least.

12 And then you can get very, very
13 complex with the label but I am not sure you
14 are going to get anywhere when you do that.

15 MR. MURRAY: No, I know. That is
16 very true.

17 CHAIR BUCKHALT: Okay. We
18 appreciate your comments. I have got a bunch
19 of questions, unless -- okay, go ahead,
20 Sueanne. And then I will let Jackie have
21 hers. And I have got six or eight questions
22 up here for the panel.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 MS. PFIFFERLING: This is for the
2 panel. I am Sueanne Pfifferling from
3 Pfifferling and Associates.

4 I would be interested in Dr. Anex's
5 response to Dr. Narayan's suggestion that you
6 could have -- you both seem to agree, first of
7 all, that having fewer and more clear
8 attributes for environmental assessment is a
9 good thing. You both have mentioned carbon
10 footprint. Dr. Narayan talks about using the
11 carbon content, the material carbon content.
12 You talk about, Dr. Anex, the consequential
13 impacts.

14 How do you reconcile those two if
15 you are just looking at the benefits of the
16 new carbon and the old carbon in the product
17 and your suggestion that you need to look at
18 consequential? Are you on the same page or
19 not on the same page?

20 DR. ANEX: I don't know if we are
21 on the same page.

22 I think you have got my position

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 correct. I think what I think was referred to
2 as process carbon by Dr. Narayan, I think the
3 process carbon and the carbon content both
4 have to be there because the process carbon
5 can completely swamp the other. So, I don't
6 know if that --

7 DR. NARAYAN: I don't think there
8 is a disconnect in that. I mean, clearly, the
9 process carbon footprint is like Robert said
10 can swamp the thing. Therefore, you need to
11 have it. But what I am saying is that don't
12 lump everything together and make it into an
13 LCA with ten categories and then use that as
14 the basis. You see what I am saying?

15 So the material carbon footprint
16 clearly gives you a value proposition. You
17 need to have a process carbon footprint.
18 Somewhere I think the gentleman from Dow said
19 it is an important integral component of it.
20 ASTM is planning to put that as a part of the
21 add-on to this how do you do a process carbon
22 footprint. It will be cradle to factory gate

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 or business gate because of the reasons that
2 you don't know end-of-life. So it will not be
3 an LCA as is generally required but I suspect
4 it will meet some of the requirements you are
5 asking and what Dr. Anex is talking about. It
6 may not be totally complete but it does take
7 that into account.

8 But splitting it or separating it
9 allows you to, like the question earlier was
10 is this just a label for just saying it is a
11 label? It is just a label because we want to
12 promote agriculture or is there an
13 environmental value?

14 And what I am saying is by looking
15 at the material carbon footprint, you can
16 communicate to the general customer that there
17 is something there. That yes, process carbon
18 footprint we looked and we need to do it but
19 to separate the two so that you give them in
20 small bites so that they can chew it and
21 understand it better.

22 MS. PFIFFERLING: But in doing each

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 of those, you could do it on an attributional
2 basis or a consequential basis.

3 DR. NARAYAN: I'll let Robert
4 answer that.

5 MS. PFIFFERLING: Correct? I mean
6 --

7 DR. NARAYAN: Yes, that is right.

8 MS. PFIFFERLING: Looking at those
9 two components, separating them out and then
10 looking at them together but you could decide
11 -- it is not boundary conditions.

12 DR. NARAYAN: And you can add this
13 --

14 MS. PFIFFERLING: Is it just
15 average data or is it marginal data, as you
16 talked about?

17 DR. ANEX: That's right. And you
18 know, I haven't looked at the range of
19 products that fall under this program in any
20 detail in the sense of doing LCAs of them.
21 And so the comment that came in over the
22 internet of well is there really any

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 difference? You know, I think you have to
2 actually do a little investigation to see if
3 consequential LCA was significantly different.

4 I can think of a few examples where I think
5 it would be. But over the broad range, maybe
6 in fact it wouldn't be.

7 MS. PFIFFERLING: Okay, thank you.

8 CHAIR BUCKHALT: Jackie?

9 MS. OTTMAN: Thanks. At the risk
10 of stating the obvious, I guess we are here
11 today because adding higher and higher levels
12 of biobased content, or even just the
13 existence of biobased content may not
14 necessarily be better for the environment. So
15 that is why we are trying to figure out if we
16 need to do this environmental analysis.

17 So to the point of whether we
18 should be looking at minimums or maximums,
19 which is the way the BioPreferrable Program
20 runs right now, is it possible that there is
21 an optimum level of biobased content that
22 could factor in environmental performance,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 product performance cost?

2 Right before Christmas I was on the
3 phone with Scott Vitters from Coke who said
4 that their plant-based bottle uses 30 percent
5 biobased content which is based from
6 sugarcane. And the reason why they stopped at
7 30 percent is because that was an optimum
8 level from an environmental standpoint which
9 was their goal.

10 I see you are smiling. But can you
11 provide a little perspective on this optimum
12 level? I am intrigued by it.

13 DR. ANEX: Well, I think in that
14 example, it is optimal because it bounces off
15 a whole bunch of other factors in their
16 production process. Right? And I don't know
17 that one specifically but if you go higher
18 content than that, they start to have bottles
19 breaking. They have to make thicker bottles.

20 The bottles are heavier so transportation
21 costs. But that doesn't mean it is truly the
22 optimal for other manufacturers of similar

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 bottles and it doesn't mean it will be
2 optimal, you know, on into the future forever.

3 And I think in different industries for
4 different manufacturers within that industry,
5 there will be a level that is optimum for
6 them. Right? And they may want to push
7 beyond that. I mean, that is really the whole
8 point of having the label is that you create
9 an incentive. Right? With the prospect of
10 greater sales to go where the market isn't
11 currently driving you to go.

12 So I think the answer is yes.
13 There will be local optima for individual
14 manufacturers to individual industries. But I
15 don't think that should drive the policy.

16 I think you want to create an
17 incentive for environmental performance. And
18 so if that is what you measure and that is
19 what you award, that is what you will get. I
20 don't think you should let Coke convince you
21 that that is the magic number. Well, and
22 similarly any other company. I mean, there is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 a myriad of examples of underbody panels in
2 the car industry. Well you know, more
3 biobased content increases their aerodynamic
4 drag but it all depends on what the fibers are
5 and how they are manufactured. And you want
6 to create an incentive to seek out even
7 better. Right? To make thinner panels that
8 are more aerodynamic and have a better
9 environmental profile.

10 DR. NARAYAN: I would take that
11 Coke example. I am sure that I am putting
12 words into Scott's mouth here but the 20
13 percent biocontent, the carbon content comes
14 from the fact that today they can make
15 ethylene glycol. It is more technology
16 limitation than an optimal biocontent
17 limitation.

18 Today I can make ethylene glycol
19 from sugarcane and therefore I can put 20
20 percent. If tomorrow I can make the other
21 component from renewable resources in a cost-
22 effective manner, then 100 percent will become

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 biocontent.

2 But the BioPreferred Program and
3 program like this basically said until you
4 achieve 100 percent, we are not going to
5 accept this as our value, then the big
6 corporations have no incentive to get into it
7 in the first place.

8 I am sure even in DuPont, if you
9 look at all the products, it is the propylene
10 diol which is the bio-component. But the
11 aromatic, which is the hardest part to
12 generate from a renewable source has not
13 happened. Not that it is not doable. It is a
14 cost. It is technology.

15 And by clearly showing a value
16 proposition in terms of that even with 20
17 percent that there is a significant or at
18 least an impact on CO₂ reductions, it allows
19 them to move to the next step.

20 Because ultimately everything is
21 something you are going forward. It can't be
22 that you have a full answer at this stage. So

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that is really where I think it is.

2 MR. SYLVAN: I would like to
3 reinforce that point a little bit from the
4 perspective of an ecolabelling program
5 manager. Specifically, Energy Star which is,
6 no surprise at EPA, one of the better models
7 we have for ecolabelling programs. The idea
8 of what is the optimal level has to be
9 answered in the context of an evolutionary
10 process.

11 So for example, in the case of
12 Energy Star, take televisions, for example, I
13 know a little bit about that program, you
14 might, the optimum level of energy efficiency,
15 for example, televisions is only sort of
16 optimal in terms of the standard for say
17 today, Phase One of the program. And it may
18 certainly not make sense in two, three, four
19 years down the road.

20 So for example, one rule of thumb
21 in Energy Star product labeling is to try to
22 set the bar initially in Phase One to qualify

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 say 10 to 20 percent of the market, 25 percent
2 of the market in terms of the most energy
3 efficient. In this case, it might be the most
4 environmentally preferable or whatever your
5 definition is. And you let everybody know,
6 all the players, the stakeholders, the
7 manufacturers and others know that this is not
8 a frozen, you know, that that standard is not
9 frozen in time. That once we grow the market
10 share to say 40 percent or so, 50 percent,
11 when we get to 50 percent, you really have to
12 think about putting the bar back up at the 10
13 to 20 percent. And so that the integrity of
14 the label is still there. That it means
15 preferable. In Energy Star's case, it is
16 energy efficient over conventional equipment
17 and so forth products. And you just keep
18 evolving the standard over time.

19 But another thing that might be
20 worth -- I wish I had this publication with me
21 right now. Some of my colleagues in the
22 Energy Star Program has put together what I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 thought was a very good document about how the
2 program manager in an ecolabelling program
3 goes about setting the bar.

4 So they look at is there good
5 environmental data available on the impacts
6 that you are after and particularly product-
7 specific data that you can look at and showing
8 some variance in the products, according to
9 their impacts. Is there a reasonable way to
10 differentiate the better products from the not
11 so good. And can you find a critical number
12 of manufacturers that produce qualified
13 products? If it is only one manufacturer, you
14 may not have a program for a whole variety of
15 reasons I can get into. If it is only two,
16 difficult, three, four, five, a little better.

17 You want to have at least some producers from
18 the start with some qualified products.

19 You also, in the case of Energy
20 Star, based on the promise that we had, you
21 want to have the same or better performance.
22 So you don't want to force the consumer or the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 institutional buyer to have say a greener
2 product but then it doesn't perform as well.
3 In the case of copiers, the copier keeps
4 jamming all the time. So yes, it is green but
5 it doesn't really work. You don't want that.

6 And sort of steps you can take to make sure
7 you avoid that.

8 And another factor that Energy Star
9 had that may be relevant here is cost
10 effective. In Energy Star's case, it is
11 either the same price or if you do pay an
12 incremental price, you get that money back in
13 a year or two or three, in terms of cost
14 savings of the product because it is more
15 energy efficient. That is sort of a loose
16 definition of cost effective.

17 If you are talking about something
18 that is much greener but it is far more
19 expensive, that is a different kind of
20 ecolabelling program than Energy Star had in
21 many of the EPA programs. It may be
22 acceptable to some of the NGO-led programs

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that are comfortable with a very, very
2 expensive more eco-elite program but not for
3 EPA's purposes, in most cases.

4 So there are a number of things you
5 look at but you never really ask what is
6 optimal for the long-term. It is sort of
7 optimal in a given point in time in the
8 market, if you will.

9 CHAIR BUCKHALT: I have got eight
10 questions that came in via the web. We need
11 to take some of those questions and then we
12 will come back and take some more audience
13 questions. And I am not sure where to start.

14 I guess I will start with another
15 one from Carol Casarino up in DuPont. Key use
16 for this LCA information is to make a cross
17 product comparison but I know it is hazardous
18 to compare LCA numbers from separate study
19 sources without digging into the detailed
20 assumptions, even if both are following the
21 same guidelines, et cetera. What are the
22 panelists' thoughts?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 DR. NARAYAN: What was the
2 question?

3 CHAIR BUCKHALT: Cross-product
4 comparison being the issue.

5 DR. NARAYAN: Oh, cross-product
6 using --

7 CHAIR BUCKHALT: LCA.

8 DR. ANEX: Yes. So, the ISO
9 Standards, if you are going to make
10 comparative assertions, which is a fancy word
11 for cross-product comparisons, puts some more
12 stringent requirements on how you perform the
13 LCA. But that said, it is absolutely true
14 that it is hard to make those comparisons,
15 particularly when you start to get much more
16 complicated LCAs. I think that is one of the
17 goals of the carbon footprinting standards is
18 that they are making them more restrictive.
19 There are much more prescriptive guidelines on
20 how to perform the carbon footprint so that
21 they will be more comparable.

22 You know, so you get a little more

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 accuracy with a little less comprehensiveness
2 and that is a fair tradeoff if that is a goal
3 you are interested in.

4 CHAIR BUCKHALT: More accuracy,
5 less comprehensiveness.

6 DR. ANEX: With a carbon footprint.

7 CHAIR BUCKHALT: With a carbon
8 footprint.

9 Let me follow on that with another
10 question and it comes from a guy named Donald
11 Cherry. He actually has two here.

12 I gather from comments made today
13 there is a general feeling that the BEES
14 program is too complex and not easily
15 understood by the public. Is there a plan to
16 modify this method of LCA in an effort to
17 simplify the results of the analysis? I am
18 asking you guys that. I mean, we are open to
19 hear from everybody their thoughts. What do
20 you think?

21 DR. ANEX: Well, it sounded like
22 the question was really one for Bobbie

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Lippiatt. Are there plans to change it? I
2 certainly can't speak to that. You know, I
3 have obviously made some suggestions about
4 ways she might improve.

5 CHAIR BUCKHALT: Also from Donald
6 Cherry, we will go ahead and take this one,
7 too.

8 What is the incentive for the use
9 of BioPreferred labeled products outside of
10 the government area? Going forward, do you
11 see some types of economic incentives to
12 promote BioPreferred in the private sector? I
13 think -- well, you have addressed some of
14 that. Our speaker from EPA talked a little
15 bit about that, what is going on, if you want
16 to take that one. What is happening in the
17 private sector with green products in general
18 and BioPreferred products? Incentives for the
19 use.

20 DR. NARAYAN: Yes, I think the
21 BioPreferred Program, while it is not clear
22 obviously, did allow, provided sort of the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 playing field, the conditions by which
2 industry was able or maybe not in totality but
3 looked to bring products into the marketplace.

4 That is clearly there.

5 So you are seeing all these
6 biobased products using the same terminology,
7 same definitions. And they are also using the
8 same two metrics, as if I may say. They are
9 talking about carbon footprint and they are
10 talking of end-of-life. All of them have an
11 LCA hidden underneath all of this but they are
12 not comfortable just showing it out and
13 throwing it out. Because LCA, if somebody has
14 to validate it, means you have to go and check
15 the data, which means no company wants to make
16 public all their inventory data of how was the
17 process.

18 So I think the BioPreferred Program
19 did provide what it first started to do, the
20 market pull, for some of these products to
21 start being commercialized.

22 CHAIR BUCKHALT: We are also seeing

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 in state governments, too, to some extent.
2 Did the Ohio legislation get passed, Kate, do
3 you know? It has not. Is it still just
4 pending? It passed in the Senate. Okay,
5 didn't get much done in Ohio. We are getting
6 answers from Karen who knows what is going on
7 with that, the soybeans are affected by that.

8 But in any event, there are states
9 and some local communities beginning, if you
10 will, to put green requirements on folks for
11 selling to those entities. So we are still
12 using the pull of government and then the
13 private sector is doing its thing, too, with
14 the Walmarts of the world. So I see it
15 continue to increase.

16 Carl, do you want to ask your
17 question?

18 MR. MUSKA: Just a comment. Can
19 you hear me? Oh, there we go.

20 Okay. Just a comment. Jeff, I
21 certainly do agree that for the labeling
22 program starting with an emphasizing Bobbie's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 content is a place to start. So I think that
2 is a good place to be.

3 But we have been talking about kind
4 of the dilemma that USDA has. It is under an
5 umbrella of something called BioPreferred.
6 Okay? And we are talking about the feedstock
7 being agricultural feedstock where there are
8 known environmental impacts. You know, that
9 being water use, that being, and this is to
10 this gentleman's point over here, other
11 environmental categories.

12 And so I think even though you want
13 to start with biobased content, I think you
14 need to acknowledge, at least, the importance
15 of these other potential impacts, water usage,
16 land use, that sort of thing, which are very
17 hot topics right now.

18 And I just wanted to ask the
19 speakers, do you see ways of initiating this
20 program with the focus on biobased content but
21 also acknowledging the importance of these
22 other impact categories?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 DR. NARAYAN: Carl, I thought you
2 were going to chair the task force which is
3 going to write that thing. Right?

4 MR. MUSKA: But I need some help.

5 DR. NARAYAN: So I think that that
6 is the next evolution. And we wrote the
7 standard for biobased content, which
8 translates to the material carbon footprint
9 value proposition. We are focusing on carbon
10 as the metrics right now.

11 We need to write a standard which
12 talks about how do you measure process carbon
13 footprint. And the PA60UK, it is actually a
14 guideline, it is not a BSI standard per se,
15 but it is a guideline which can be used to
16 write that up.

17 We also need to identify how you
18 would work with complex products in that case.

19 You know, how would you write the process
20 footprint for that. So, they don't exist
21 today. But there is an acknowledgment that
22 needs to be done.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 What I hope doesn't happen is
2 because we are not there is to stop the
3 program, per se. Wait until the answers are
4 there and then we put out these or we put out
5 a requirement asking for everything because we
6 are not sure what we want kind of thing.

7 So we know that we can provide the
8 material carbon footprint. We know we can
9 provide end-of-life value and we can provide
10 process carbon footprint process,
11 environmental footprint where necessary up to
12 business gate. This is all there today.

13 CHAIR BUCKHALT: Steve?

14 MR. DEVLIN: Yes. I was wondering,
15 up to this point we have kind of focused on a
16 product-by-product assessment, in terms of
17 this program. Do you think there would be any
18 value in looking at LCA or environmental
19 assessment, whatever you want to call it, at a
20 material level and as opposed to looking at
21 the end products, looking at maybe the 50,000
22 foot level and coming up with some more

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 generalized environmental statements about
2 biobased materials that then could be
3 transferred or could be attributed somewhat to
4 the end products?

5 CHAIR BUCKHALT: Intermediate
6 ingredients, perhaps?

7 DR. NARAYAN: I think that it is a
8 great suggestion because if you look at, that
9 is the intermediate thing which we are talking
10 about. If for example NatureWorks has got
11 this elaborate life cycle assessment of
12 multiple impact categories, all the way from
13 growing corn to making the starch from that
14 milling process. So there are some very
15 fundamental processes in agricultural
16 feedstock processing which exist today,
17 soybeans being one.

18 If these could be sort of studied
19 and put under in the BioPreferred website
20 saying when you are doing your product
21 footprint here from growing all the way up to
22 here, this is the data, the best data

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 possible. Right? Not 30 year old data which
2 goes into that. Then that would be of value,
3 I think, maybe.

4 DR. ANEX: Well what that sounds
5 like is here are the data for these
6 intermediates, if you will. But that doesn't
7 get to the end products. Right? I mean, the
8 question about labeling. If I take soybean
9 oil and turn it into a polymer, I may have a
10 bad carbon footprint or a bad environmental
11 profile, even though I started with the
12 greenest soybeans I could buy.

13 And I sort of see as providing
14 those standardized data might be of use but I
15 don't know that it helps in the end case. And
16 I think if you think about things like
17 commodity chemicals as intermediates, you
18 start to get into a huge range. I mean, does
19 Sorona replace, you know, it might replace.
20 It can be used in place of a whole bunch of
21 other polymers but there isn't a nice category
22 there. Biobased propylene glycol is not going

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 to be a standard thing. It is going to be how
2 somebody produced it. So I don't know that
3 that buys us too much. I guess all I am
4 really saying is I don't quite see where this
5 gets us.

6 DR. NARAYAN: Well I feel like
7 today, whether the USDA embraces the LCA or
8 LCI or not, there is data being published in
9 the literature, including the journals, which
10 takes data from whatever they come up with.
11 If there is a standardized database which can
12 be employed, it may not be complete, at least
13 there is a reference point where if I am going
14 to use say vegetable oil or soybean oil or a
15 poly oil or a chemical, I have all of the
16 inventory from a generalized approved
17 database. I don't have to depend and go to
18 somebody to do that. Then, I put in my
19 process and other things. Then I can complete
20 it. And for a small manufacturer/producer,
21 that is much more easy to do than to start all
22 the way from growing the corn and looking at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 all the data and looking at all the multiple
2 data.

3 I think that is where the value is.

4 MR. SYLVAN: This is way beyond my
5 area of expertise but I believe that is the
6 promise of the sustainability consortium and
7 that kind of Wikipedia, if you will, that they
8 are building. And it might be worth checking
9 that out and also looking to earthster.com,
10 which is the information technology platform
11 they are building this system around.

12 DR. ANEX: Now that is absolutely
13 true and Greg Norris and the Sylvatica guys
14 came up with open I/O, so it uses the
15 input/output, economic input/output tables.
16 And so you get some of the consequential sorts
17 of effects I was talking about and coupled to
18 environmental databases. And so you can go in
19 there and say I bought this much of this and
20 this much of that and you have the
21 environmental life cycle footprint for it.

22 And one of Dr. Narayan's colleagues

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 has been doing a great deal. Bruce Dale and
2 his post-doc have been doing a lot of work on
3 the feedstock production side very spatially
4 desegregated down to the county level. And
5 that sort of data can be very easily or
6 beginning to be made publicly available and
7 definitely would be useful.

8 CHAIR BUCKHALT: Here is a question
9 that we got from the outside, Dorothy Allen
10 asked and this might be answered better by
11 perhaps our friends from USB or maybe
12 NatureWorks.

13 Is anyone working on non-
14 biodegradable biobased plastic as a means of
15 replacing fossil feedstock and sequestering
16 carbon? I know we do have some non-degradable
17 plastics. Anyone want to talk about that?

18 MR. DAVIES: I will make a quick
19 comment. I think the answer is sure. Our
20 friends DuPont in the room, PTT, Dow, PE does
21 both an evolutionary approach where we make
22 the way existing materials, biobased, PE, PP,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 PET, the Coke bottle. And there is the
2 revolutionary approach where we make new to
3 the world materials like polylactide NGO or
4 like the PHAs. So, both are valid and needed
5 approaches.

6 You guys can comment.

7 CHAIR BUCKHALT: So just because it
8 is a bioplastic does not mean that it is
9 biodegradable or compostable or et cetera.
10 There are ways to tweak it to make it a non-
11 degradable plastic.

12 DR. ANEX: Well and I will just
13 throw in our NSF ERC, Engineering Research
14 Center, for Biorenewable Chemicals is aimed at
15 replacing commodity chemicals with biobased
16 materials. And that is a huge range but we
17 are looking at the large volume. And they, I
18 believe, for the most part, would be
19 completely non-biodegradable.

20 CHAIR BUCKHALT: A couple of other
21 questions? Maybe some folks here will be
22 thinking of some others.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 For Dr. Narayan. Can Dr. Narayan
2 provide a ballpark estimate of how the total
3 mass of carbon released in processes to make a
4 kilogram of biobased resin compares to the
5 mass of carbon contained resin. I think it is
6 comparing two, the petroleum-based resin
7 versus the biobased resin.

8 What is the return of processed
9 carbon emissions to materials carbon for some
10 typical cases? And that is from Paul Chalmer,
11 C-H-A-L-M-E-R.

12 DR. NARAYAN: I didn't quite get
13 the question.

14 CHAIR BUCKHALT: You and me both.

15 DR. ANEX: I think the question is
16 what is the relative magnitude of the process
17 carbon versus the embodied or the material
18 carbon.

19 CHAIR BUCKHALT: Right.

20 DR. ANEX: And of course it is
21 going to make a big difference depending on
22 which polymer or material you are talking

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 about.

2 DR. NARAYAN: Correct. Actually,
3 if you took polyethylene in my graph, if you
4 saw that, the embodied carbon, the material
5 carbon has got a 320 kgs per 100 kg CO₂.

6 The process carbon footprint, which
7 is to convert all the way from oil to
8 polyethylene is around 130, 140 kgs of CO₂ per
9 100 kg of resin. So there, the material
10 carbon is certainly higher than the process
11 carbon footprint.

12 If you take PETs, probably the
13 other way around or pretty close in terms of
14 material carbon versus process carbon
15 footprint.

16 CHAIR BUCKHALT: Okay. We have
17 four more questions here and we will try to
18 take those. If we have no others on the line,
19 we will bring this thing to a close a little
20 early today but it looks like Kate is getting
21 up to ask a question. So go ahead, Kate.

22 MS. LEWIS: Do you have other web

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 questions? I don't want to --

2 CHAIR BUCKHALT: I have four more.

3 MS. LEWIS: Okay. I just thought
4 of something by way of an overview or summary
5 but by no means designed to stem the
6 discussion. Maybe it will serve as an
7 energizer for the last bit of discussion here.
8 And I put it together based on the last hour
9 or so of dialogue.

10 First, I want to thank the 70 or so
11 people who are sticking with us and
12 participating in the meeting via webinar. That
13 is a very challenging thing to do. We
14 definitely appreciate your attention and your
15 great comments.

16 The word biobased has environmental
17 implications associated with it, just the word
18 biobased, and expectations associated with
19 what it means. And then our program name
20 being called BioPreferred certainly does as
21 well.

22 So I think I can speak for the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 program management and staff in that our
2 biggest challenge moving this program forward
3 is to build our brand. You know, and our
4 brand is not the label. It is not the logo.
5 You know, our brand, BioPreferred, is what our
6 stakeholders can expect and what is the
7 meaning of biobased as it pertains to what
8 USDA offers.

9 So our biggest challenge is to
10 seven years since this program started, is to
11 continue to build our brand and the
12 development and the launch of labeled biobased
13 products is a part of that. It is a tool but
14 to take advantage of the historical strengths
15 of our 4500 products currently. There are
16 4500 BioPreferred designated products. But
17 position the products moving forward in the
18 future definition and market development and
19 market transformation of what truly a
20 sustainable product means.

21 CHAIR BUCKHALT: Thank you, Kate.
22 And thank you for remembering the folks on the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 line and folks who are listening and doing it
2 on the webinar because we appreciate you guys
3 being out there. Seventy some-odd was the
4 last count. Thank you. I know it is kind of
5 tough these days to travel. We appreciate
6 your input. I am going to try to hit these
7 last four questions fairly rapidly. We will
8 have some time for some wrap up. Jeff, if you
9 have any last words you want to bring, I will
10 ask for at that point.

11 And thank you, folks, for your
12 attentiveness. I am very, very pleased. I
13 see Jim Darr is raising his hand. So, Jim.

14 MR. DARR: I just had a real quick
15 question I wanted to bring up and it relates
16 to end-of-life impacts and it is not a new
17 question but I would be interested to hear
18 about any new developments and sort of, you
19 know, the recyclability of the biobased
20 plastics' impact on existing recycling
21 streams. And ideas have come up for that, you
22 know, some new numbers. Like PET has its

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 number polypropylene. So you know, so that
2 those products can be identified and, if
3 necessary, separated out from streams where
4 they present a problem. You know, is there
5 any recycling infrastructure being developed
6 for biobased plastics? And recognizing that
7 until the market reaches a certain size, you
8 know, it is probably difficult to support
9 that.

10 But anyway, for anybody on the
11 panel or anybody else in the room, I would
12 appreciate updates in that area.

13 CHAIR BUCKHALT: I think
14 NatureWorks has done some studies there, too.

15 DR. NARAYAN: I will speak on PTE.
16 I will let Steve Davis PLA recyclability
17 because that is a direct question there.

18 The plant bottle which is the 20
19 percent biobased content, the end-of-life
20 strategy for that is certainly not
21 biodegradability because it is not
22 biodegradable but it is recycling. And it is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 recycling back to bottles.

2 So here is an example of a product
3 which is containing a bio-
4 based content where the end-of-life strategy
5 is built into recycling. And the same holds
6 true for PLA, if you want to elaborate. There
7 are programs which can collect and recycle PLA
8 bottles as well.

9 MR. DAVIES: Yes, I appreciate the
10 question. Let me just sort of go back to the
11 automatic presumption in the question which is
12 that there do exist infrastructure and
13 recycling systems for today's oil-based
14 plastics. I think that was implicit in the
15 question and I don't want to be provocative
16 but I think that is fluid. You look at all
17 the plastics that are out there today, really
18 only two are recycled at all, that is HDPE and
19 PET. And those are only recycled basically at
20 25 percent and then only in bottle format.

21 So all those are the plastics three
22 through seven and everything that is in number

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 seven, other plastics, aren't recycled at all
2 today. So I just want to make sure that folks
3 understand that the existing infrastructure
4 that we have worked so hard at as an industry
5 for 30 years isn't working very well. Before
6 we sort of defend it.

7 Now that said, anyone new in the
8 plastics-based bioplastics producers are
9 following, I think, very much like ourselves,
10 an extended producer responsibility model will
11 take great care to follow the product
12 downstream, see where it goes, as Ramani
13 talked about earlier, understand its behavior
14 in landfill, and understand that it actually
15 is inert in landfill, so you basically
16 sequestered carbon.

17 And we are working with most of the
18 recycling industry, call it APR, to really
19 understand how to fit this, swap this plastic
20 in the different formats bottle, widget
21 container and so on, in any existing
22 infrastructure and see how it works.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 But a tremendous amount of work has
2 been going on. I guess the thought I would
3 leave you with is this is a barrier that any
4 new producer in the bioplastics base with an
5 inert material is going to have to sort of do
6 what we have done, which is follow the
7 material through its life; understand how it
8 performs; know what options it brings, whether
9 it is recycle, whether it can compost, which
10 is absolutely the right end-of-life, and a
11 food service application, where it is
12 contaminated with food; or whether with a
13 material like polylactic it can be chemically
14 recycled back to the lactic acid monomer and
15 then to a version polymer with no down
16 cycling.

17 So a tremendous amount going on.
18 Not the place to talk about it here but I
19 think a good question.

20 CHAIR BUCKHALT: A couple other
21 questions from outside from the folks who are
22 on the webinar. What about a product which is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 microbial-based, i.e., using microbes and
2 degradation? How does one use an LCA in this
3 product? From Joel Thurmond.

4 You are the man who knows about
5 microbes here, Ramani. You want to take that
6 one?

7 DR. NARAYAN: Well, what was it?

8 CHAIR BUCKHALT: What about a
9 product which is microbial based, using
10 microbes and degradation? How does one use an
11 LCA on a microbe product?

12 DR. NARAYAN: The manufacturer or
13 the end-of-life? I will take both.

14 PHAs is obviously the
15 polyhydroxyalkanoates or polyhydroxybuterate
16 valve rate, which is the ADM Metabolix, Telles
17 is the new name, I think venture producing or
18 manufacturing this product that it uses
19 microorganisms to produce it.

20 The LCA will be like, it is like
21 any other. It is a biological catalyst
22 similar to a chemical catalyst and the process

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 footprint will be done similar to what you
2 would do in any other process, treat the
3 microorganisms as a biological catalyst and
4 sort of a chemical catalyst, with its
5 attendant the fact that this catalyst doesn't
6 have to be just closed off. You know, it can
7 be easily biodegraded because it is a
8 microorganism and all that comes into play.

9 In an end-of-life, again, if it
10 goes into composting, then the value of the
11 compost and how do you plug that back into the
12 LCA a little difficult and challenging. In my
13 opinion, the end-of-life strategies and end-
14 of-life options, and doing a clean impact
15 assessment and what it is, is not that simple.

16 Given the fact that if you talk about a
17 landfill, today landfills are now being
18 transformed into generating methane, which can
19 be used for energy. But there are still a few
20 emissions associated with it.

21 Composting is good but do products
22 all end up in composting? If they are not,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 then what is the value? How do you decide
2 that?

3 So the end-of-life has got a lot of
4 question marks and what ifs. And you can't
5 provide a quantifiable answer to it. And
6 therefore, we are taking it out of the
7 equation for the present with the idea that as
8 things emerge and dial up, you can build it
9 back into it. So hopefully, that answers that
10 question.

11 CHAIR BUCKHALT: Okay, since you
12 still have the mike, I will give you this one.

13 It is addressed to you from Minal Misty or
14 Mistry, you will have to look at that, at
15 GreenBlue.org.

16 Dr. Narayan, are you saying the
17 data and databases such as ecoinvent used in
18 SimaPro, I think is what is spelled here, need
19 more verification? Can you elaborate?

20 Are we putting you on the spot
21 there?

22 DR. NARAYAN: What was the comment

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 again -- question?

2 CHAIR BUCKHALT: The hour is
3 getting late.

4 DR. NARAYAN: The question was am I
5 saying that the data and databases, such as
6ecoinvent and SimaPro need more rectification.
7 Can you elaborate?

8 My only comment is that in the case
9 of biofeedstocks or agricultural feedstocks,
10 for example, take PLA manufacturer in Blair,
11 Nebraska from corn. Today they have switched
12 from or are planning to switch from fossil
13 energy to renewable energy, wind energy.
14 Those things don't appear, as I understand
15 yet, may not be appearing in the database.

16 CHAIR BUCKHALT: Right.

17 DR. NARAYAN: Therefore, if
18 somebody does a comparative LCA on a biobased
19 product and a petro-based product using this
20 database, it will probably show that a lot of
21 water is being used. The end-of-life goes in
22 the landfill and because it is anaerobic, it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 is giving off methane. And so it skews the
2 analysis.

3 So, it is not a reflection on the
4 database, per se. The database reflects what
5 is available in terms of inventory data at
6 that time in that state. It may be,
7 therefore, more useful for somebody like USDA
8 to actually provide that database or the data
9 which can go to databases like this. That
10 could be a good role for the BioPreferred
11 Program.

12 CHAIR BUCKHALT: Okay, thank you.

13 Yes, ma'am?

14 MS. REDDOOR: Hi. My name is
15 Marlene RedDoor. I am with US EPA and I also
16 have a single attribute program in recycled
17 content products. I get asked a couple of
18 questions and I have to ask them, since they
19 kind of weren't asked today. So, I have to
20 ask them of you while we have it.

21 Number one is that I am a little
22 uncomfortable with the end-of-life separated

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 from the factory gate because we know as in
2 manufacturers can greatly influence what
3 happens at the end-of-life by technology and
4 processes and things like that.

5 So, I am not sure why we have to
6 end at the factory gate, since if the
7 manufacturing process can have an influence on
8 the end-of-life and make it easier and less
9 environmentally impact.

10 So the second things is, we are all
11 talking and Steven as well with the Energy
12 Star of a single attribute life cycle. When,
13 as Steven showed, there are hundreds of
14 ecolabels with different multi-attribute
15 things. And although Congress has deemed that
16 we should concentrate on our one attribute,
17 there is such growing concern among our
18 consumers, our manufacturers, that why are we
19 concentrating on one attribute when that
20 attribute might not be as environmentally
21 preferable as another one? So we all need to
22 get together and talk about this.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 But anyway, on those two ideas, do
2 you have any comment?

3 DR. NARAYAN: The point I made
4 about end-of-life and including it or not
5 including was not to discount the value of
6 that. Today, if you look at some of the
7 biobased products manufacturers, including the
8 Biodegradable Products Institute, they are
9 actively working to double up the devotion of
10 food waste and the biodegradable plastics goes
11 into a composting infrastructure, thereby
12 ensuring that there is a real meaning to the
13 use of biodegradability.

14 The problem is that when you take a
15 database and do an LCA to prove or disprove
16 something, then today, 80 percent, 70 percent
17 goes into a landfill, in spite of all of the
18 recycling and other programs. Then the
19 question comes up, why am I even making a
20 biodegradable plastic because eventually
21 everything goes into a landfill.

22 So if you are going to do what you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 are asking for, then you need to allow me or
2 allow the manufacturer to show to the
3 consumer, without muddling it up with maybe if
4 it went here, but if it goes here, and
5 therefore, it goes here when you are losing
6 totally, to show a clear environmental
7 proposition up to where I control it. And
8 show that by doing the proper end-of-life,
9 like if it is biodegradable it goes into
10 composting or anaerobic digestion, that going
11 into a landfill gives you no value, that you
12 are sending the right message, and then
13 working to improve it.

14 But let's take that point where you
15 say well include everything and then only
16 communicate it. Then if I am a champion
17 within a company trying to promote this
18 product, it will never get into the
19 marketplace. It is a chicken and egg story.

20 So it is not to disconnect the
21 inclusion of the end-of-life. It is to say
22 that break it up into parts so I can show

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 where I can be successful, where I have an
2 influence, where I can make a commitment and
3 try to work with others to pull that through.

4 Does that make sense to you?

5 For example, in the State of
6 California, the use of the word biodegradable
7 is band because calling something
8 biodegradable without ensuring that it goes
9 into a composting infrastructure didn't make
10 sense to them. And therefore, the end-of-life
11 has to be where you meet that composting
12 requirement and it does go into a composting
13 infrastructure.

14 MS. REDDOOR: Well I had an example
15 of let's say nylon carpet. Some of the carpet
16 manufacturers take back the carpet and make it
17 back into carpet or make it back into other
18 products and it creates the market for that.
19 If they hadn't thought about it in the first
20 place on how to manufacture it so they can
21 deconstruct it and put it back into carpet and
22 other things, then you wouldn't really have

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that. It would just go somewhere else and
2 somebody else would be responsible.

3 CHAIR BUCKHALT: Take-back programs
4 is what you are talking about.

5 MS. REDDOOR: Well --

6 DR. NARAYAN: How many of those
7 take-back programs exist today, in terms of
8 volume?

9 MS. REDDOOR: Well, if we don't
10 think about them, will they? I mean, it is
11 like you said, the chicken and the egg. There
12 has always to be some thought about how am I
13 going to get this natural resource that may
14 not be available any more? So I am going to
15 look for other ways to get it so that I don't
16 have to take it from where it is becoming
17 scarce.

18 CHAIR BUCKHALT: I am going to ask
19 two more questions, just to get them on the
20 record here. And one of them is unanswerable
21 but I am going to ask you anyway. What is the
22 typical cost of an LCA?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 It depends on what kind of LCA you
2 are doing and how extensive you want to go. I
3 mean, it can be thousand or it could be
4 hundreds or it could be hundreds of thousands.

5 I mean, you know, how far do you want to go?

6 And I see Rick shaking his head there. Dow
7 has done some LCAs and some of them are fairly
8 intensive.

9 I know some of the other
10 manufacturers here have done some fairly
11 expensive LCAs on their product. So I will
12 answer that one. It is unanswerable because
13 we don't know.

14 The other one. While LCAs are
15 product-specific, has USDA published any LCA
16 data on different types of preferences? Not
17 to my knowledge is the answer to that one.

18 I am assuming it is individual.
19 Patricia Dylan is asking have we done
20 something on recycled products? Have we done
21 something on WaterSense or some of the other
22 things that you have got in EPA that are

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 preference-type products in the federal
2 government? Has anybody done that? Do we
3 know? The LCA on all these types of products,
4 green products, preferred procurement
5 products. I don't have any data.

6 DR. NARAYAN: It is in your
7 database somewhere.

8 CHAIR BUCKHALT: Well, yes. He
9 says it is in our database somewhere. It
10 probably is.

11 Again, Jeff, would you come forward
12 and kind of give us a close and give us your
13 take on what happened today?

14 And again, thank you folks so much
15 for your time and attention. We really
16 appreciate it. And we are going to keep all
17 these things and work towards making some
18 changes, maybe. No promises but we have got
19 some good information.

20 MR. GOODMAN: Well, I wanted to
21 echo what Ron said about thanking people for
22 their time.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 And I wanted to reassure everyone
2 about a point that Ramani made about not
3 waiting until all of the answers are in. Our
4 plan is to move forward at a steady pace to
5 try to revise our program guidelines. To the
6 extent that ASTM Standards come out, or other
7 pieces of information come forth consistent
8 with trying to move things forward within the
9 next year or so, so be it. But we will try to
10 come up with the best public policy and the
11 best program guidelines that we can and we
12 will not be waiting until the development of
13 further information because that is an ongoing
14 process and if we did that, we would never
15 have program guidelines.

16 CHAIR BUCKHALT: And one final
17 note, Riverside, California will be holding a
18 public meeting February 24th, Complex Products
19 Forum. The 23rd, we will have a training
20 program, Doing Business with the Federal
21 Government.

22 Likewise, April first, we will be

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 having a forum in Ames Iowa with Iowa State,
2 dealing with intermediate ingredients. And
3 the 31st of March, we will be having some
4 training in dealing with the federal
5 government, how to sell your products to the
6 federal government.

7 Thank you all for coming. Having a
8 good day. I appreciate your input.

9 (Whereupon, at 12:51 p.m., the foregoing
10 public meeting was adjourned.)
11
12
13
14
15
16
17
18
19
20

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com